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TEXACO

REG. T. M.

TEXACO

COMMERCIAL CAR JOURNAL

Vol. LIII. No. 5 JULY, 1937

The OVERLOAD

A Follow-Up

THERE'S variety in this issue, and it matters not whether you are a vegetarian, a meat- eater or a starvation striker, you're certain to find something to interest you. A "must" article for everyone in the truck industry is the leading one on Ability Factors. It is a follow up of last month's editorial entitled "Will Trucks Be Made to Move Faster on Grades?" It presents the opinions of engineers. In requesting their opinions we asked that they think independently and speak frankly. Next month another group of engineers will speak.

Not a Crusade

APPARENTLY in some quarters our June editorial conveyed the impression that we favored an ability rating of 4 per cent grade at 20 m.p.h. Such an impression carries with it the inference that we are engaged in a crusade. That is not the case, although we like a crusade as well as any publication and as a matter of fact—for your ears only—we have a crusade up our sleeves and mean to spring it shortly. Our present effort is purely one of exploration. We are striving to amass viewpoints which will be representative of the trucking industry and which will serve as an authoritative guide to legislators and regulatory authorities.

Operators Must Speak

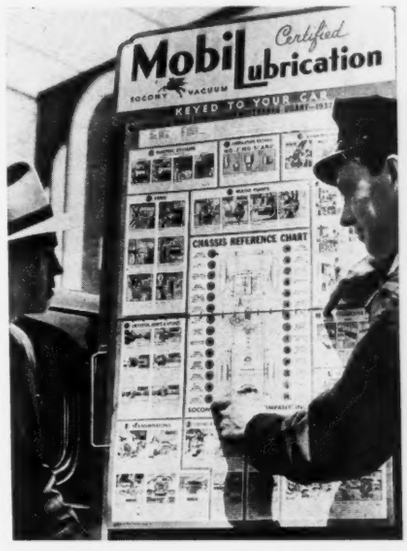
WE hope to receive and publish the viewpoints of fleet operators. We feel that the subject is important enough for every fleet operator to think about it, to form an opinion and to let us have it for the published record. We urge operators to read the questions on page 20 and to give us their answers. We'll be glad to publish them with or without names. Do it now for the good of the industry.

Build a Book Shelf

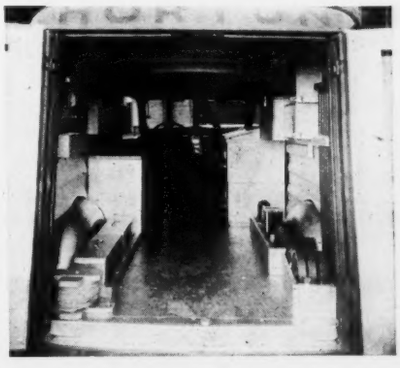
OUR electrical series got under way last month. The second article appears in this issue. This month we launch a carburetor series. It will take months to give fleet operators all the material we have gathered for these two series but when they are finished we will have given you a wad of practical information such as no publication has ever compiled. If you are wise you'll either clip the pages and file them or hold on to the issues.

Novelty by Deduction

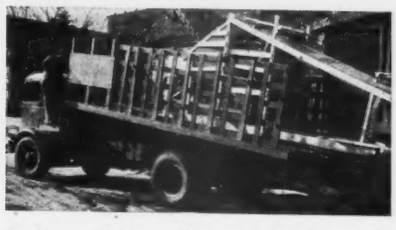
WORKING on the theory that fleet operators are mechanically-minded and the mechanically-minded are generally racing enthusiasts we give you this month an account of the Indianapolis race from a technical viewpoint. If



Socony-Vacuum Oil Co. has issued a lubrication chart which is designed to dramatize to operators lubrication requirements for all types of trucks and buses. Each type of transmission, steering gear, generator, etc., is illustrated showing the application and path of the lubricant and in turn is keyed with the chassis diagram. The entire chart is so keyed that it serves as a ready reference to lubrication requirements and positions.



Davis & White, logging operators at Marysville, Wash., just bought 12 Kenworths for use in the world's largest logging operation. This one rides the wooden rails across a trestle. Power is supplied by a Buda engine. Front axle is a Timken; transmission and auxiliary are a Brown-Lipe. Brakes are Lockheed hydraulics with B-K Booster



Rochester Cartage Co., operates this traffic type Mack with a platform type body which, by means of an underbody hoist, is raised and lowered for loading and unloading purposes. When machinery is being pulled on the body by means of a winch, the body can be supported in a raised position by means of two 20-ton jacks at the rear

Horton Motor Lines, Charlotte, N. C., has added two safety cars to its 300-truck fleet. The two Reo light delivery trucks will patrol the highways while drivers keep their eyes peeled for emergencies. Note the neat interior which includes such equipment as Pyrene foam and liquid fire extinguishers, first aid k't and stretcher, shovel, axe, bulbs, fuses, ropes, lamp pots, flags, certified measuring tapes and a camera

The OVERLOAD

you think it's a waste of good space howl a loud howl; if you like it, just sit tight until next year, same place, same time.

Our Hunt for Hinters

WE'VE another batch of Shop Hints for hint lovers, of whom we seem to have quite a bevy. We'd like to have twice as many each month. That should encourage you—and we do mean you—to send in the hint you've hesitated to send in for fear it might not be good enough. Send it in and let us judge its worth. The reward is still $5 per hint.

Oh, Sludge!

A COUPLE of months ago we decided that sludge and sludging rated an article. It puzzled us to hear some operators speak of sludge with a hunted look, and others treat it lightly as a bit of harmless rubbish. So a staff man went out to investigate, interrogate and inquire and even to ask an occasional impertinent question. The result is we give you the whys and wherefores of sludge, and don't bother preparing yourself with a stiff slug of stimulant.

FREE

Mark X and mail, as usual, to the Editor, Commercial Car Journal, Philadelphia.

- ☐ **A—An engine bearing service manual, highly recommended.**
- ☐ **B—Fleet Operators cleaning manual by Magnus.**
- ☐ **C—Ahlberg anti-friction bearing manual and catalog.**
- ☐ **D—Budd dual wheel and parts catalog.**

Name .....

Title .....

Firm Name .....

Address .....

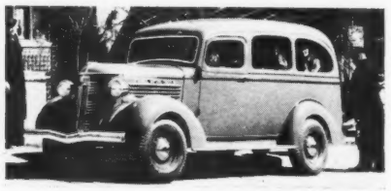
City .....

No. Trucks ..... **No. Cars** .....

Dodge designed this truck especially for carrying passengers in field operations. Capacity is 15 persons. Compartments under the driver's seat and at the rear provide room for tools, etc. The tarpaulin may be removed when desired

Dodge also offers this 109-in. wheelbase truck of 1½-ton capacity with a cab-over-engine conversion and a special dump body. The dump body side is hinged and the rear gate slants, all providing added load space. A hydraulic hoist does the dumping

A special crane mounted on this 4-5 ton heavy-duty Federal simplifies the tree moving and planting operation at the World's Fair site in New York. The crane is operated by two power winches



This smart 8-passenger suburban car body is mounted on a GM truck chassis. By removing the two rear seats a load space of 32 sq. ft. is available for light delivery purposes. A drop-door luggage compartment is at the rear

And So Forth

THAT by no means summarizes the issue, but we can't go on talking this way for pages. You'll find something on painting, on the trends of legislation and on the Scott case which some day may be famous. Also there are revised Semi-Trailer and Third Axle Specifications.

For That Book Shelf

A HANDSOMELY-PRINTED, sumptuously-bound, 82-page book entitled "The Autocar Line" has just come off the Autocar promotional line. Copies are scarce but if you really want one you've a good chance of getting it by writing Robert F. Wood, Advertising Manager, Autocar Co., Ardmore, Pa., and saying CCJ sent you.

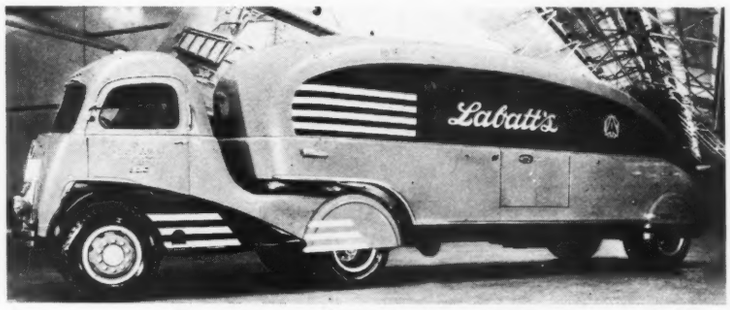
Seeing is Seeing

A PROVISION in the new California motor vehicle code requires 85 per cent of the current from the battery to be delivered to the last marker light.

Around for $1,500

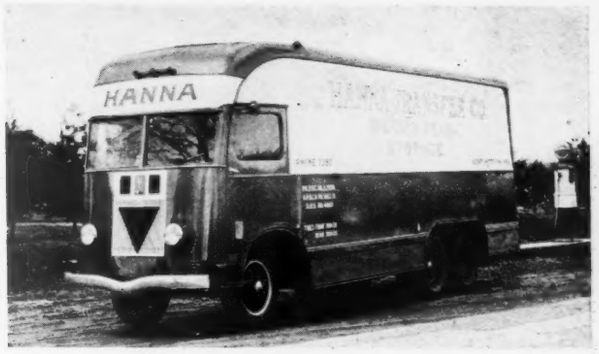
FROM a bulletin of the Automobile Shippers, Inc., Detroit: "The other day a fellow rounded a curve too fast and an old man pushed the truck off the highway. Results:

A new tractor demolished	$1,195.00
A telephone pole snapped	98.00
A home owner's yard and landscape damaged	75.00
Sending tractor for trailer	40.00
Wrecker Service	35.00
Returning wrecked tractor to Detroit	40.00
Telephone calls	2.50
Investigation by our road man	10.00
Total results of too fast driving	$1,495.50



This is another of the Labatt (Canadian Brewer) specials streamlined for style and utility. Tractor is a White model 812 with a 109-in. wheelbase and powered by a 318 cu. in. engine. Trailer is a Fruehauf on which is mounted a body designed by Count Alexis de Sakhnoffsky and built by Smith Bros., Toronto. The unit has an overall length of 35 ft. and width of 96 in. Capacity is 35,000 lb.

EARS TO THE *Ground*



Transport Equipment Co., Erie, Pa., built this cab-over-engine furniture truck on a Ford chassis using a Tandem axle manufactured by Perfection Steel Co., Galion, Ohio. The van is 28 ft. long, 92 in. wide and 10 ft. 6 in. high overall. Capacity is 1200 cu. ft. There is an underslung cabinet between the front and rear axle which measures 9 ft. long, 12 in. high and 30 in. deep. An underslung cabinet aft of the rear axle is used for small objects. A spare tire is carried in a compartment entered from the rear and integrally locked with the rear doors. The tail gate mounted on roller bearings slides under the rear of the body when not needed

Transmission Tantalizer

From nearly beneath this department's window a passenger car was started for Detroit last week to make a "demand" demonstration of an automatic transmission that had been fitted to it. The transmission is a product of an industrial manufacturer who has not heretofore been seriously connected with the automobile business. The demonstratees could find nothing amiss despite numerous trials and now series negotiations are in progress. It may make the automobile show as standard equipment.

Spring Sprite

This department's overworked passenger car agent has hinted that one of the new models will be sprung entirely by coil springs. He has given us no indication that the rear wheels will be independently sprung although the front wheels will be.

Windshield Wiper

One of our talented agents worked his way through the defenses of a company that is usually successful in keeping dark new announcements until they are made formally and he found that a new windshield wiper is about ready for marketing. It is electric, more compact and dependable and of unusual interest, lower priced.

Piston Paradox

It will seem like 1924 again when the trend stories for the new models all say "aluminum pistons make gains," but that is exactly what will happen. Some of the manufacturers who have never used aluminum pistons will adopt them without much comment and perhaps one who deserted the aluminum standard for cast alloy will return. The cast alloy, it is reported, have been giving acute misery.

Trailer Total

According to Director Wm. L. Austin of the Bureau of Census, who should know, there were 2519 truck trailers sold last year for $2,296,444 and 23,875 semi-trailers went into operation and these cost the operators $27,421,763. The passenger car trailer business which everybody seems to be steamed up about produced more trailers but sold them for considerably less money. Census details are on page 66.

Capital Converter

Our Mid-West operatives would not be at all content with this month's effort unless we made mention of a new oil-burning carburetor which has impressed them very deeply. All they have told us so far is that it has a spark plug in the carburetor and that the test cars give remarkable performance along with good economy. All of this except the bit about the spark plug describes every device of this kind, so we hope to be more specific before long.

Bearing Bible

Albert B. Willi, chief engineer of the Federal Mogul Corp., has compiled a book on engine-bearing troubles and their remedies that this department thinks is the "berries," the "nuts," and then some. It is listed on the coupon on opposite page and opportunity knocks at your door.

Fog Feature

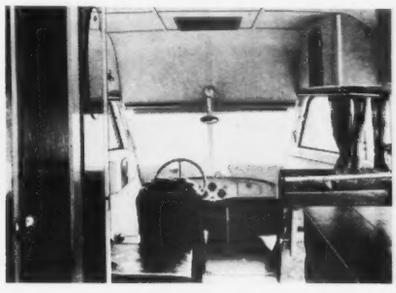
Wm. R. Walker of the Enterprise Transfer Co., Chicago, Ill., is importing a light from England that comes with an imposing number of claims. In addition to illuminating an area 100 ft. wide without glare to an oncoming driver, the light is said to penetrate fog, and rain and snow are invisible in its rays.

Fleet Fruit

About 13 months ago this department covered itself with glory by uncovering a description of a low horsepower, heavy axled, light bodied city delivery truck being built by a fleet in a fleet shop. Now we can report that car No. 1 is so successful that 10 more are being built to extend the test against other vehicles.

Model Mart

Practically at press time the magazine of which this department is a subsidiary found that the Diamond T announcement would not arrive in time so this department scooted into action and warns you that a description of a new 1-1½-ton description will appear next month. It involves a new engine of about 220 cu. in. and some swell styling.



Indian Trails, of Owosso, Mich., built this unusual touring-cabin body and mounted it on a Dodge 1½-ton truck chassis. Parking difficulties are thus eliminated. Inside, the driver sits on a single seat. Additional seating space is provided by the seat at his right as well as the seats on the wall sides at the rear and left of him. Note window shades on windshield and side windows

ENGINEERS FAVOR ABILITY Factor

DISCUSSION CONDUCTED By GEORGE T. HOOK, Editor

BELIEVING that an essential contribution to the Ability Factor subject would be one absolutely free of sales and operator influence, Commercial Car Journal addressed four questions to truck factory engineers. To encourage independence of thought and absolute frankness, it promised that opinions published would not be identified with the persons expressing them. Here are the questions:

I. Do you personally consider slow-moving vehicles a safety hazard on hills?

II. What ability factor (per cent grade in miles per hour) do you favor for trucks and combinations?

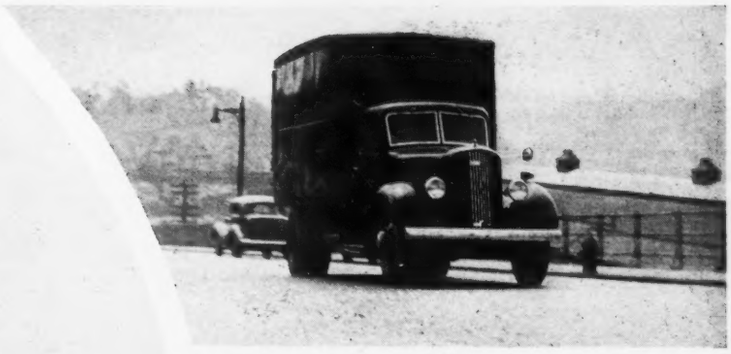
III. If ability factor regulation is adopted should it have a "grandfather clause" What time extension would you give existing equipment?

IV. What effects do you foresee on truck design if a 4 per cent at 20 m.p.h. ability factor is imposed?

Replies received in time for this issue are given here. Other replies will be published next month.

Comments of all readers are welcomed and will receive similar treatment.

For previous editorial discussion of the subject see "Will Trucks Be Made to Move Faster on Grades?" Editorial on page 34 of June issue.



THE precise manner in which one engineer arrived at his conclusions is evident in this contribution:

"I have made a very careful study of data which you publish in Commercial Car Journal. From this I was able to determine what the various engine and truck manufacturers who build their own engines claim in the way of horsepower developed per cubic inch of displacement. Next I developed a formula that determines the horsepower required to move a vehicle at a given speed on a given road and grade. Here it is:

$$\frac{(Rr + Rg) \times G.V.W. \times S}{33000 \times E} = H.P.$$

Rr = Rolling resistance = .012 pound per pound G.V.W.
Rg = Grade resistance = .01 pound per pound G.V.W. per each per cent grade
G.V.W. = Gross vehicle weight in pounds
S = Speed in feet per minute
33000 = Pounds feet per minute in 1 H.P.
E = Efficiency = .90
H.P. = Horsepower

Applying this formula I arrived at the following data, which led me to my conclusions:

Displacement Cu. In.	Maximum H.P. per Cu. In.	R.P.M. for Max. H.P.	Maximum G.V.W. @ 20. M.P.H. for largest engine in each class 3% Grade	4% Grade	5% Grade
-200	0.44	3500	27000	22500	19000
200-250	0.336	3200	31000	25500	21500
250-300	0.298	2800	34500	28500	24000
300-350	0.275	2700	38000	31500	26500
350-400	0.268	2600	41750	34500	29000
400-450	0.264	2450	45000	37250	32250
450-500	0.256	2400	47500	39250	33250
500-550	0.237	2300	50500	41750	35250
550-650	0.210	2200	54500	45000	39000
650-	0.189	1750	57500	47500	40000

AT the time of going to press eight engineers had sent in their replies to the questions shown in the opposite corner. These eight engineers represented truck manufacturers who were responsible for 51.73 per cent of the new trucks registered in the United States in 1936.

For the reader's convenience and in the hope of arriving at a mass opinion, the replies are grouped by questions. Each engineer has been assigned a number which precedes his reply to each of the four questions. In this way you may, if you wish, ascertain the replies of a particular engineer to all four questions.

Let it be understood that every answer is a direct quotation. In no case has the editor permitted himself to make an interpretation.

Here are the questions and the answers:

I. Do you personally consider slow-moving vehicles a safety hazard on hills?

1. Slow-moving vehicles unquestionably present a hazard. Wherever roads are hilly or winding the presence of a vehicle which is moving materially slower than the traffic stream is particularly hazardous as it incites following drivers to attempt passing where sufficient clear space ahead is lacking.

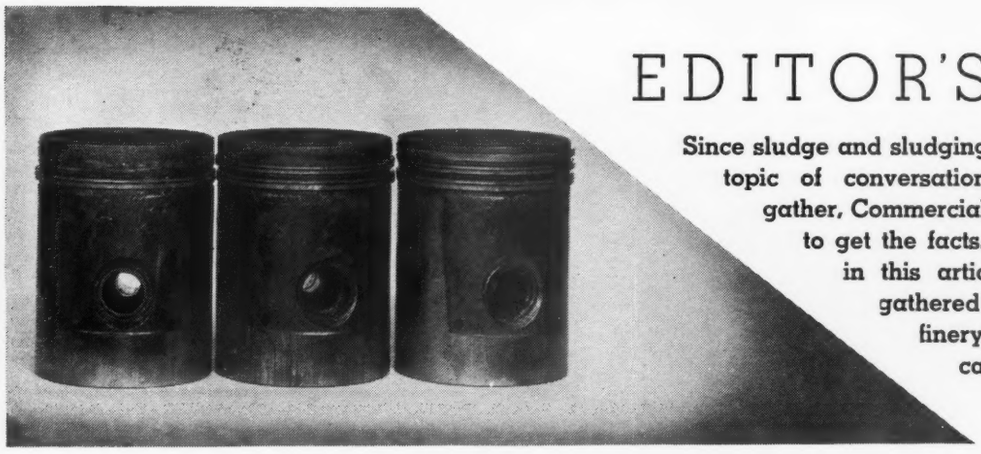
2. Discussion with numerous drivers of both trucks and passenger cars as well as personal observation indicate that slow-moving vehicles on hills are a definite safety hazard.

3. Our answer to your first question would be, yes.

4. I do personally consider slow-moving vehicles a safety hazard on hills. It is, however, a matter of degree, depending on how slow-moving the vehicles are and how difficult they are to pass.

5. I certainly do consider slow-moving vehicles a safety hazard on hills

(TURN TO PAGE 54, PLEASE)



EDITOR'S NOTE

Since sludge and sludging is becoming a popular topic of conversation wherever fleet men gather, Commercial Car Journal started out to get the facts. The information given in this article is a blend of data gathered from fleet operators, refinery technicians and lubricant consultants.

Above—Piston rings stuck with sludge. Right—Water emulsion in the oil pan

SLUDGE Panned by Experts

Who Let Down Their Hair and Tell What It is, What It Does and What Can Be Done About It

SLUDGE can cause the fleet operator misery by sticking piston rings so that they fail to give an adequate piston-to-cylinder seal, by sticking valves so that they fail to seat accurately and promptly and in severe cases by plugging oil lines. However the mere presence of a moderate amount of sludge in the oil pan is not evidence that sludge is doing any of these things. Whether or not sludge is causing high maintenance costs is something that each operator will have to decide for himself taking into consideration all of the factors of his own operation.

If, for instance, piston rings seem to be giving normal service before replacement, it is necessary to determine if that so-called normal life could not be extended if sludging were eliminated. If valve-grinding periods can be stretched out by eliminating sludge, then sludge is interfering with normal operation. But because the life of these parts and the inspection periods vary so much depending upon the type of service it is just as involved a process to determine the importance of sludge as it is to determine the inspection interval.

The word "sludge" seems to have two accepted definitions. Among refiners and lubricant technicians the word is synonomous for the hard flinty substance that gathers inside the engine. Actually this substance consists of a very hard material composed of particles of carbon held together with an asphaltene mixture which acts as a binder, next to the engine surface. Next is a semi-solid material of the same composition in the process of becoming a very hard solid and on top of that is a layer of dirty oil substance which is in the process of becoming semi-solid. The top two layers can be washed or scraped away easily but the last layer sticks tight.

FLEET operators look upon sludge as the mass of black impurities which gathers in the engine internals and will not flow. This substance is made up of refiner's sludge and an emulsion of water from condensation and the lubricant itself. All together it is a black gelatinous or mushy mixture. An analysis of this crankcase jelly has shown it to contain as high as 90 per cent water. It seems safe to assume that some fleet operators are suffering from either or both kinds of sludge without suspecting it. It is also possible that some fleet

By HENRY JENNINGS
Technical Editor, Commercial Car Journal

operators are unduly alarmed over small amounts of either kind of sludge which may not be doing any particular harm.

The water which gets into the crankcase and causes the mushy mess gets in through the carburetor in the form of hydrogen in the gasoline. When combustion takes place the hydrogen burns away to water and with increased compression ratios and consequent compression pressures a larger percentage of this water, that used to go out the exhaust system as steam, is forced by the increased pressure down past the piston rings where it condenses in the crankcase and forms an emulsion with the crankcase lubricant. Added to this is the normal condensation of the air in the crankcase due to rapidly changing temperatures. Temperature control of the engine has a great deal to do with its sludging propensities.

The refiner's sludge is a product of oxidation or combustion. The chemical structure of the oil changes and asphaltenes are released that are insoluble in naptha but which will dissolve in cloroform or benzine. These combine with carbon particles and form a dry sludge. There is only about 1/10 of 1 per cent of foreign matter in dry sludge. So long as this mixture forms in the oil pan no harm is done but when it forms in piston ring grooves or on valve stems it will stop efficient functioning of these parts.

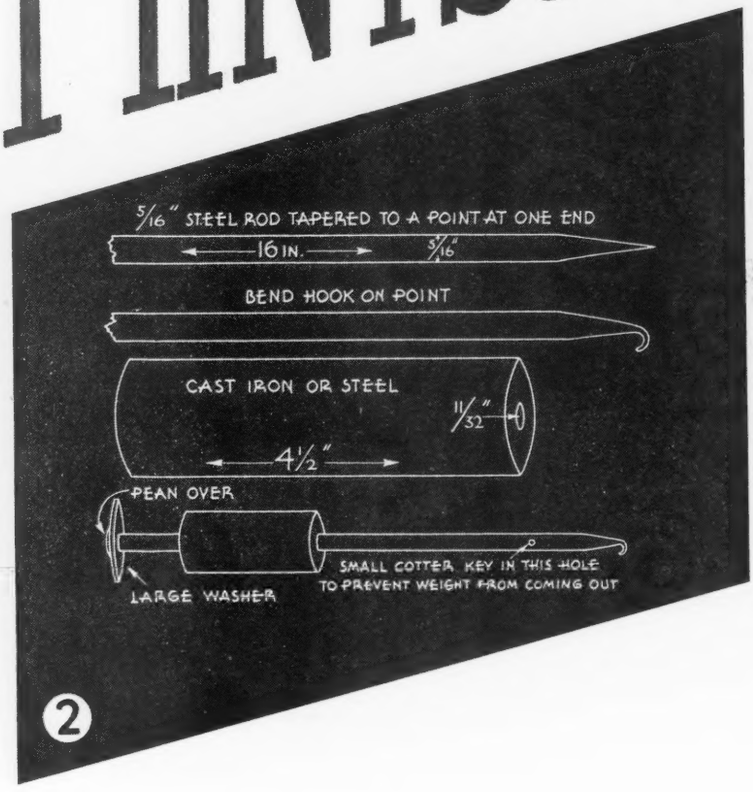
DISCOLORATION of the oil in itself is not a symptom of sludge formation nor is it much of an indication that the oil has lost its lubricating quality. Oil heated to 200 deg. for 100 hours in a perfectly clean test tube will darken. Technically this is the first step in the transition from oil to some other substance and therefore not desirable but, practically, slight discoloration does not mean much to the fleet operator. Oil that shows clear on a dip stick when used in an engine equipped with a good oil filter will be dark if drained and viewed in a bottle. Still on any known analysis of crankcase drainings this sample may show that it is perfectly good crankcase lubricant. If it is not, the inadequacy will be due to some factor other than one having to do with the discoloration. These statements do not apply to the black opaque drainings which carry a large percentage of colloidal materials, among them carbon.

Most fleet operators can remember attempting at some time in their careers, to relieve sticky valves by pouring kerosene or carbon tetrachloride through the choke of the carburetor or by letting the windshield wiper hose draw it from a container. This process, in a crude way, achieved the same results as the application of sludge solvents or removers do in a scientific

(TURN TO PAGE 48, PLEASE)

SHOP HINTS from

1



2

1. Lubricating Gun

By J. L. LYDEN
Phillips Bros. Coal Co.
Pittsburgh

WE have made a rear axle lubricant gun that comes in especially handy when a truck breaks an axle shaft at the differential and it is necessary to remove the rear cover plate to remove the broken end of the shaft on the road. It is a problem to get enough lubricant into the housing to last until the truck gets back to the garage. We also use this gun at the mine and in the yard.

The gun was made from a discarded fire extinguisher, the body of which was in condition to be used as a tank. The hose connection on the top was closed with a cap and then a hole was drilled in the shoulder at the top and a piece of ½ in. copper tubing was pushed through the hole so that it came to about ¾ in. of the bottom of the tank. It was cut off at the top so that it projected about 4 in. above the shoulder. It was securely soldered into place.

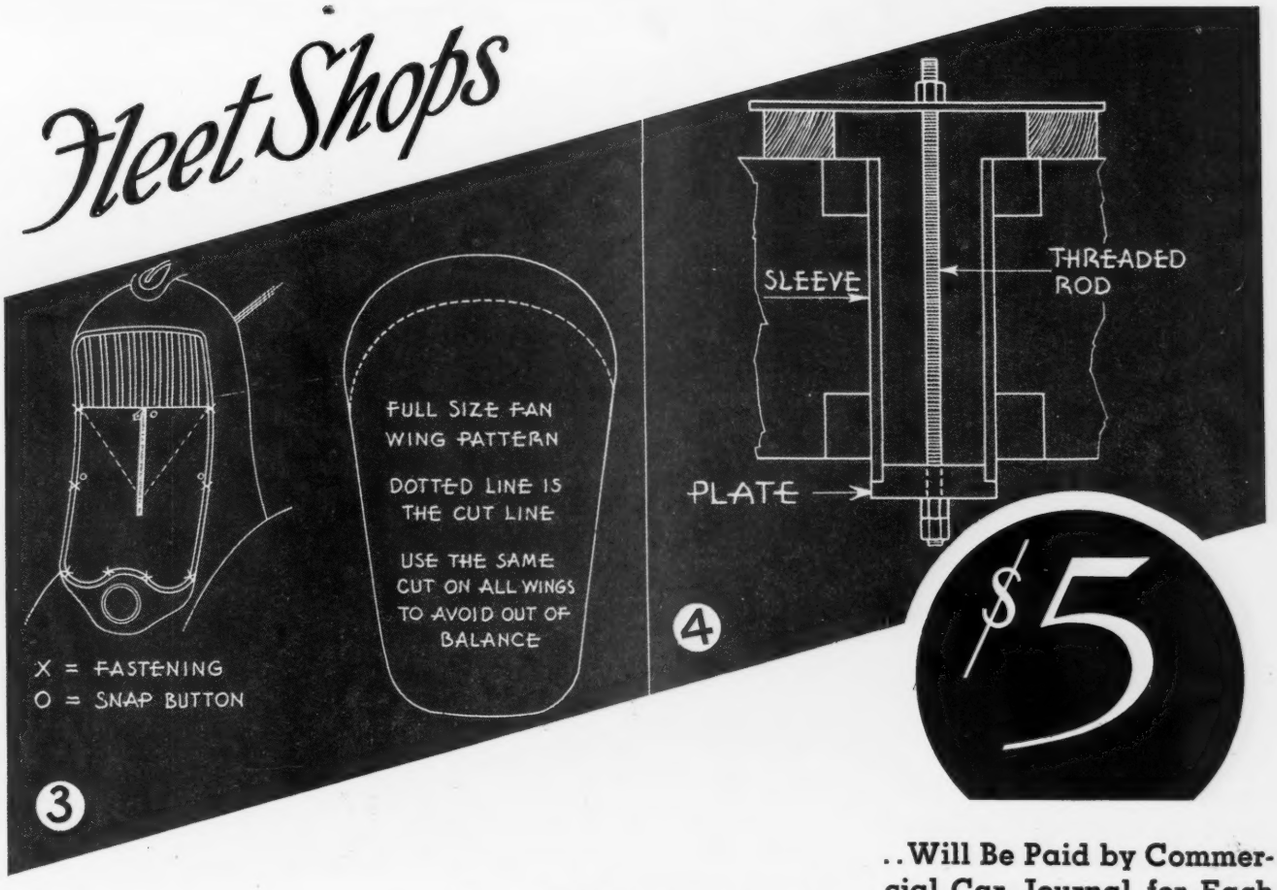
A ½ in. hose was clamped to the tubing and for an outlet we used a Schrader No. 8250 chuck although a gear oil nozzle would have been better, connecting it by means of a reducer and a length of ¼ in. iron pipe. The screens in the chuck were removed and the ferrule at the nozzle closed and used as a cap to prevent drippage. A gasket under the cover and a tire valve made tight with sheet lead gaskets completed the job. It was tested by filling to the top with water and attaching tire service hose with 150 lb. pressure. Thereafter it was filled with air from the paint gun line, using the regulator limit set to a pressure of 50 lb. which proved sufficient if the tank is filled with 2/3 lubricant and 1/3 air.

2. Cotter Key Remover

By EARLE J. SEWARD
Michigan Bell Telephone Co.
Lansing, Mich.

REMOVING cotter keys in inaccessible places especially on the later model vehicles has presented difficulties and loss of time in completing the job. The removal of the key often takes more time than the adjustment of the clevis. To over come this difficulty we constructed a cotter key remover (shown in illustration) which has saved us a great deal of time and is used in

Fleet Shops



..Will Be Paid by Commercial Car Journal for Each Shop Hint Accepted. Ideas Count—No Matter How Rough. We Will Polish Them Up for Publication

many places where the cotter key is hard to reach.

We took a 5/16 in. steel rod, 16 in. long and tapered it to a point at one end. Then we bent the point end into a hook. Sliding on this rod is a cylindrical piece of cast iron or steel 4½ in. long and drilled 11/32 in. longitudinally. On the hand end of the tool is a flat washer to prevent the weight from sliding off. The washer is held in place by peening the end of the rod. About one inch from the business end, the rod is drilled and a small cotter key is inserted to prevent the weight from coming off that end. Place the hook through the eye of the cotter key and use the weight as a hammer sliding it until it strikes sharply against the flat-washer. Three or four blows will remove the most obstinate cotter key.

3. Heat Control

By BILLIE BURGAN

Hage's Ice Cream Co., Ltd.
San Diego, Cal.

WE had a downtown delivery truck that ran too cool and after giving some thought to thermostats and pulleys we decided to cut down the fan. To begin with we made a full size paper pattern of a fan blade and carefully marked off the portion that we wished to cut off taking care to see that each blade was trimmed the same amount so that we did not create an unbalanced condition. We found that we could raise the water temperature about 5 deg. for every ¼ in. that we cut off the fan blades. In addition we made a zipper radiator cover in our trim shop which we used in connection with the cut down fan. The combination works perfectly and we are now able to keep the truck operating at 175 deg.

Stud Removal

When a forward exhaust manifold stud breaks on some of the newer model trucks and cars we drill it for removal with a long shank (rod welded to drill) drill inserted through a hole in the fender in line with the stud. Removing the wheel permits the drill to operate under the fender. When finished we fill the fender hole with a round head stove bold and dab it with black paint.

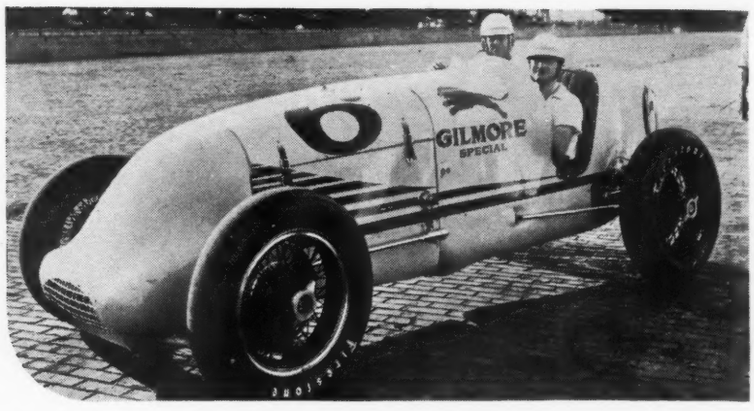
4. Sleeve Puller

By JOHN BLOM

Blom Brothers, Pleasantville, N. J.

REMOVING a wet sleeve is a difficult job. The book issued by the truck manufacturer suggests placing a wooden block between the bottom of the sleeve and the crankshaft and then turn the engine over with a crank. This will work sometimes but often it is impossible to remove sleeves this way after they have been in service for a while. Some mechanics resort to driving the sleeve up from the bottom of the engine with an edged piece of steel. This is a hard way to remove the sleeve and there is danger of breaking it if the tool slips.

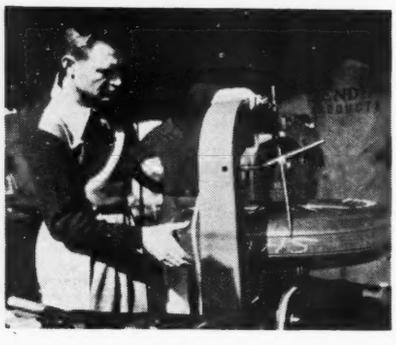
We made a round piece of steel step cut that fits the bottom of the sleeve and in this plate we drilled a hole. Now we remove the sleeve by screwing a nut down on a threaded rod which comes down through the sleeve and goes through the plate. Lock nuts below the plate keep the plate from slipping off and at the top is a bar of steel stock which we mount on two blocks to give room for sleeve movement.



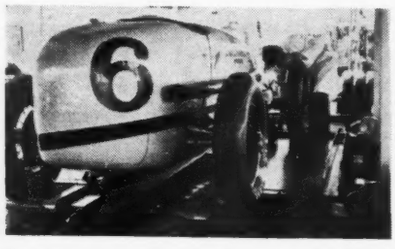
Wilbur Shaw at the wheel of his record-breaking racer

113 M.P.H. for 500 Miles

Above—Checking front-end alignment. Below—Wheel-balancing, all a part of racing



Below—Checking brakes on a dynamic brake machine. Right—Shaw and Johnson tuning-up



Has Nothing Directly To Do With Trucks But Fleetmen Should Be Interested in the Lessons It Teaches. Back of Every Race Car As Back of Every Truck Are Careful Attention to Design, Maintenance and Skilled Operation

By BOB HANKINSON

WILBUR SHAW demonstrated his ability at the work bench and at the steering wheel by completing the 500-mile race at Indianapolis at an average speed of 113.8 miles per hour. This demonstration was witnessed by about 170,000 persons who cheered wildly and recognized it as one of the world's greatest sporting events. It was really more than that. Shaw built and conditioned a car to get the utmost in horsepower and then to turn the horsepower into speed. He was limited to 25 qt. of lubricating oil by rules just the same as fleet operators are limited by the dictates of economy. He was limited by the rules to the use of regular commercial gasoline and to 360 cu. in. of piston displacement.

In short Shaw, striving for mechanical efficiency, was handicapped by rules which closely parallel economic laws for day to day operation. The greatest difference between the racing problem and that of truck operation is that in racing the mechanic seeks horsepower to propel a light car at high speed instead of a heavier vehicle at road speed. When rules limit the amount of oil and the type of fuel that can be used there

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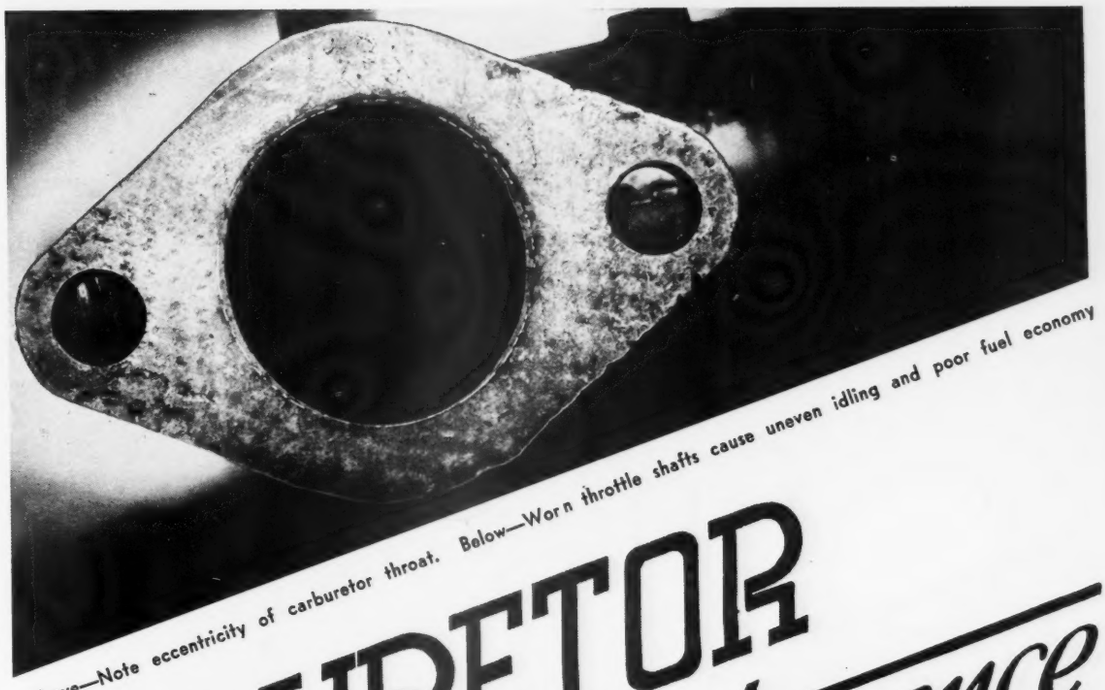

Above—Note eccentricity of carburetor throat. Below—Worn throttle shafts cause uneven idling and poor fuel economy

CARBURETOR Maintenance

. . . Based On Periodic Inspections Is the Line to Fuel Economy. Things to Look for Are Gasket Wear, Defective Jets and Dirt. Step by Step Procedure for Maintaining Popular Carburetors Will be Given in Succeeding Issues

ECONOMICAL carburetor maintenance like that of other units depends upon periodic inspection. Just when and how often the carburetor should be inspected no one seems able to say with any conviction because of the varying service that is the lot of carburetors in fleet operation. The movement of carburetor parts has more to do with the setting of inspection periods than does the mileage or the amount of gasoline that flows through them. A carburetor on a house to house delivery truck should receive some attention long before the carburetor on an over the road truck.

One of the best methods of setting carburetor inspection periods seems to be to synchronize them with the periods of fairly complete engine inspection. This reasoning is based on the fact that the same conditions that wear out an engine also wear out a carburetor. If this reasoning is good the carburetor should be removed from the engine and disassembled far enough to permit a thorough inspection. From these inspections a thorough overhaul period can be determined.

The success of the inspection depends upon the keenness of observation powers possessed by the inspector. The use of a micrometer is not essential but is of course a help in determining wear on the various parts. Many carburetor men simply look for the shiny surface that indicates wear and if it is present

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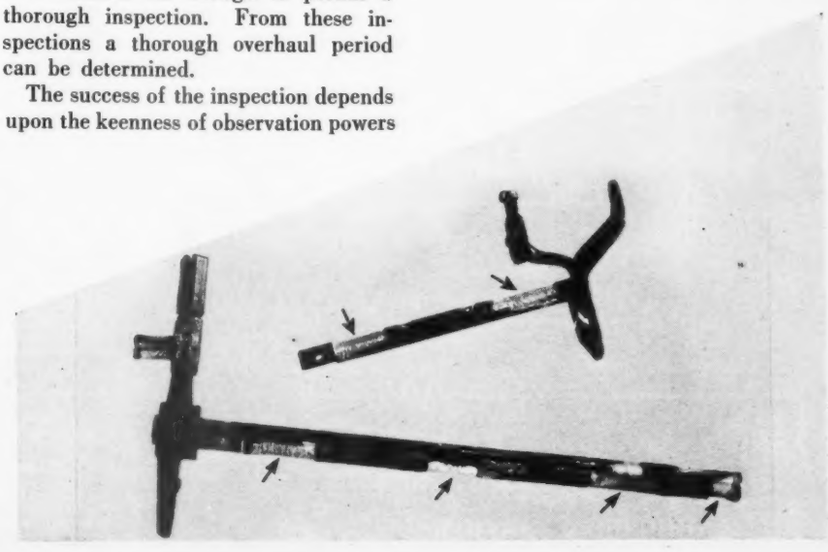
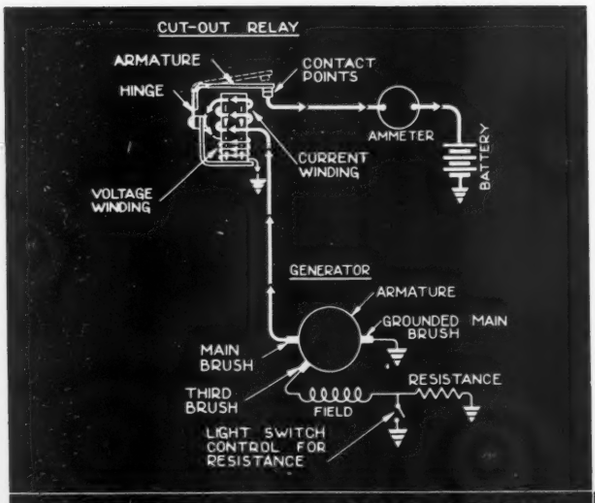
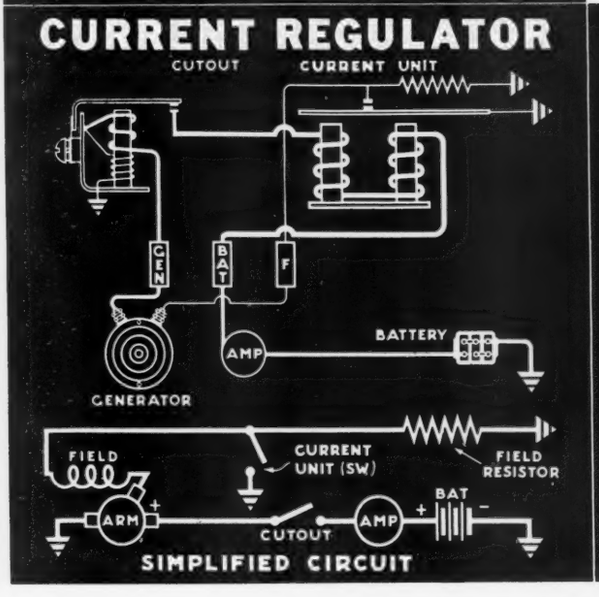
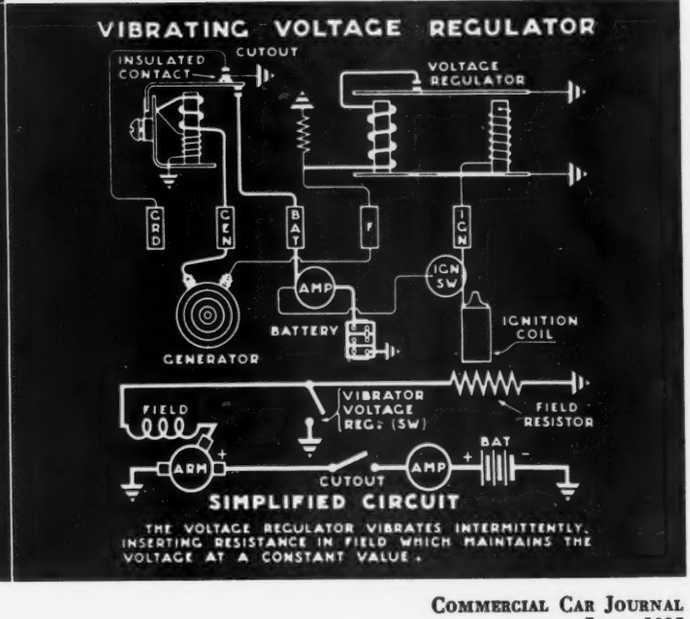


HOW THE *Current* REGULATOR-CUT-OUT RELAY & VOLTAGE *Regulator* OPERATE



Electrical units are as easy to service as mechanical units, but you have to know how they operate before you can service them. Here is a detailed explanation on how they operate that is easy to understand. Articles on servicing particular units will be published in succeeding issues.





ELECTRICAL Series 2

By WILLIAM H. CROUSE

Don't let regulators fool you, there's nothing mysterious about them. A regulator is nothing more than a magnetic switch. And a magnetic switch is nothing but an electromagnet which opens and closes a circuit with a pair of contacts.

Anyone who has wrapped a few turns of wire around an iron core knows what happens when current flows through the wire. The flow of current causes a magnetic field in the core, it becomes an electromagnet.

Add an armature of iron or steel, hinged so it can move nearer or farther away from the core, a pair of contact points, one stationary and the other on the armature, and you have a magnetic switch.

The contact points can be arranged to either come together or be separated as the armature moves down toward the winding core. When the arrangement is such that the points come together, the mechanism has the essentials of a cut-out relay.

Illustrated in Fig. 1 is a cut-out relay shown schematically. There are two windings, a current or series winding consisting of a few turns of heavy wire through which the entire generator output must flow, and a voltage or shunt winding consisting of great many turns of fine wire, through which due to its high resistance, only a small amount of current passes.

The function of the cut-out relay is to close the circuit between the generator and the battery when the generator is revolving at generating speed and to open the circuit when the generator falls below generating speed.

With the generator at rest, the cut-out relay contact points are open. (Shown dotted) As the engine is started and the generator speed increases, there is but one path, external to the generator, through which the current can flow. This is, as indicated by the arrows, through the current winding of the relay, then the voltage winding, to ground. The direction of the magnetic fields of the two windings are seen to add.

The generator voltage increases with increased speed, which causes more current to flow through the cut-out relay windings. When the voltage reaches the value for which the relay has been set, it is forcing or "pushing" enough current through the windings to create in the core sufficient magnetism to overcome the armature spring tension. The armature is pulled down toward the core, the contact points are closed, and current flows through the armature, through the points, to the battery as shown by the arrows. This current flows through the current winding in the right direction to add to the magnetic force holding the armature down and the points closed.

Should the generator slow to below generating speed or stop, current will begin to flow from the battery to the generator. The direction of current flow in the voltage winding is always the same, to ground, therefore its magnetic field is always in the same, direction. But with the direction or current flow in the current winding reversed, its magnetic field is reversed.

The two magnetic fields of the two windings now buck each other and the resultant magnetic force is no longer strong enough to hold the armature down. The armature is pulled up by its spring tension, the circuit is broken. Thus a cut-out relay is a magnetic switch which opens or closes a circuit in accordance to the voltage in the circuit.

REGULATORS are also magnetic switches which operate on a similar principle, but their function is somewhat different. A regulator's function is to limit a generator's output to a safe maximum or to reduce the output in accordance to the requirements of the connected electrical load and the condition of charge of the battery.

Regulators cannot increase generator output beyond the maximum for which the generator is designed.

Anyone who has ever twirled a resistance knob knows that inserting a resistance in the generator field will reduce the generator output. The added resistance, of course, cuts down the amount of current flowing in the generator field windings, which in turn reduces the magnetic field strength and thus the generator output.

Chevrolet has used a light switch controlled field resistance for the past few years. This is shown schematically in Fig. 1. When the light switch knob is pushed all the way in, the generator field switch is open and the field is grounded through the resistance, thus resulting in a reduced generator output. If the light switch knob is pulled out to any other position, the field is grounded directly at the switch, allowing the generator output to increase. This is a manually operated switch.

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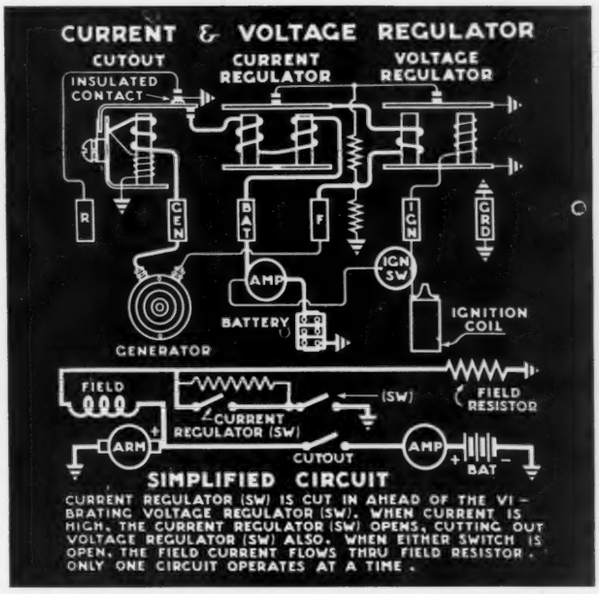


Shown here are schematic drawings of voltage and current regulators discussed in the article. They are referred to in the story as: Fig. 1, shown on the far left at top; Fig. 2, far left on bottom; Fig. 3, right of opposite page; Fig. 4, left.

Beauty MAKE-UP

MAKES THE MOVIE STAR AND MAKES THE FLEET

Van Sciver's Chief Beautician Tells How Their Painting Procedure Results

"MY, what a swell looking truck!"

That's a remark that has frequently played a sweet tune in our ears and we never tire of hearing it because as long as Van Sciver customers, as well as other disinterested persons, say it (unsolicited), we feel justified in following our paint and wash schedule. And for the benefit of others, it should be stated right here that our P&W (paint and wash) routine is anything but ordinary. Of course, good painting procedure has been conventionalized, and our shopmen follow good painting procedure. But we also have another factor to consider and that factor is J. B. Van Sciver, Jr., himself—the man who is general manager of the furniture house of J. B. Van Sciver Co., Camden, N. J., with branches in Trenton, N. J., and Allentown, Pa.

You wonder what J. B. has to do with it? He insists that the appearance of the trucks be second to none and with such insistence to guide them,

in a Paint Job Second to None

Above is shown the latest addition to the Van Sciver fleet of 24 trucks. This "semi" measures 45 ft. and has a 2500 cu. ft. van capacity. It was finished in the Van Sciver paint shop. Left—Two views of the paint-process showing sanding and spraying respectively.

When new equipment is purchased, Van Sciver takes them "raw" and builds up its own beauty finish.

By
L. D. JOHNSON
Superintendent of Maintenance, J. B. Van Sciver Co., Camden, N. J.

our painters spare no efforts in the painting process. To date they have not failed to get J. B.'s nod of approval. But to get it, we use a painting routine which includes the use of both primer and surfacer, three to five coats of color with a clear finish on top of both long oil rubbing and flowing varnish and at both the beginning and finish of the job we use materials to our own specifications not commonly followed in fleet shops.

So when someone says, "My, what a swell looking truck," here is the process that went before:

That truck went through one of three refinishing processes. The first is a complete strip-down and refinish job. The second is a finish over the old paint and the third is a brightening-up process to remove tree markings and restore lustre. Let's discuss these in the order named.

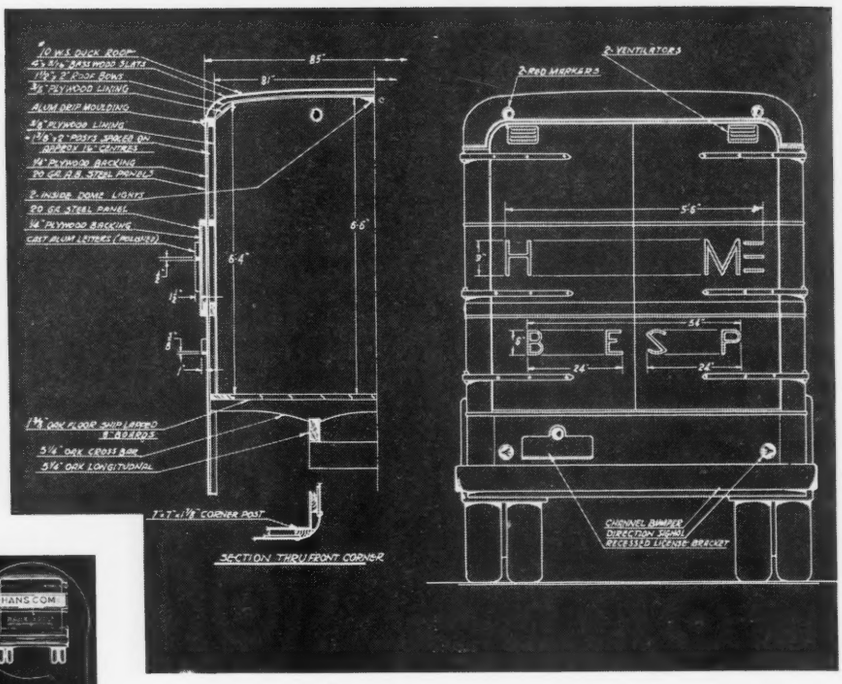
IN the strip-down job we use a paint remover which we mix in our shop according to our own formula. This simply consists of equal portions of alcohol and benzol to which is added 2 oz. of parafine wax per gallon of solution. It is both economical and effective. The benzol acts as a highly effective cutting agent; the alcohol helps dissolve the softened paint and the action of the wax is to stop too rapid evaporation due to high concentration of alcohol as well as to provide a "body" to the solution which must remain on the panel (without excessive running) for about 30 minutes. In preparation the alcohol and benzol are poured together and the wax is melted and poured in.

In action, the solution is applied with a brush over a large area and allowed to set about 30 minutes. This time factor varies. If the day is damp, the material evaporates slowly and consequently cuts the paint more quickly. If the day is dry, the material evaporates more quickly and consequently more solution has to be applied. Sometimes it is necessary to make two applications, depending both on the weather and number of old coats of paint on the truck. However, once the old finish is dissolved, it is removed by scraping with a wide putty knife.

The truck is then rinsed down two and sometimes three times with straight alcohol using a rag or sponge and it is

(Turn to Page 70, Please)

IN the trucking business, where the profit or loss is determined by the cost of distribution in which load capacity, and hence body design, plays an important part, a designer of equipment is distinctly a much needed service and an economy, not an expense. This article, written by a body designer, tells what services and benefits the fleet operator receives from the designer.



Left—Artist's drawing of the Hanscom body which is shown in detail and to scale above. Right—Designer Westberg at work. The Feigenspan

SOME NEW(D) FACTS ABOUT Body DESIGNING

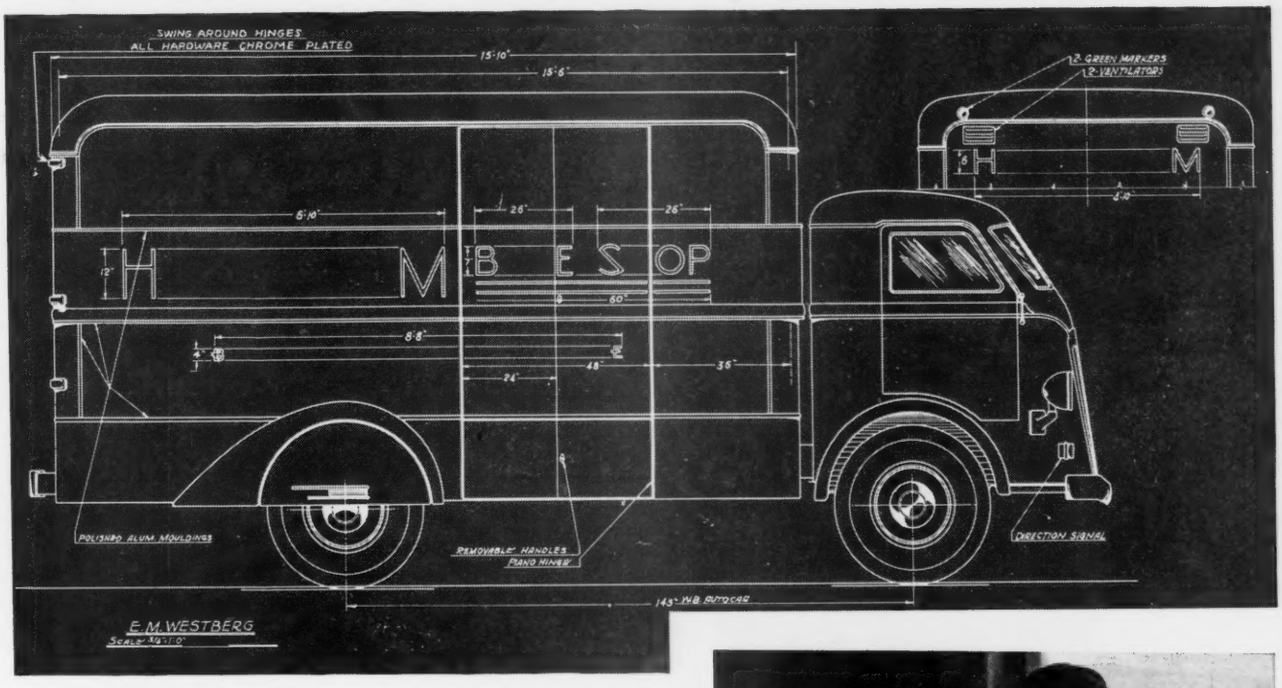
. . . Stripped to Bare Essentials for Fleetmen By a Designer Who Has Created Desirable Shapes; His Job is to Put Beauty and Utility In a Body to Fit the Vocation

By E. M. WESTBERG, Body Designer

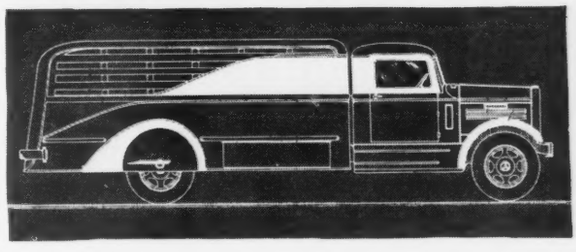
TODAY as in no other time in the past can there be too much emphasis placed on the design and preliminary study of commercial bodies. Whether we look at it from the angle of the fleet operator or body builder there are worth while benefits to be gained by both.

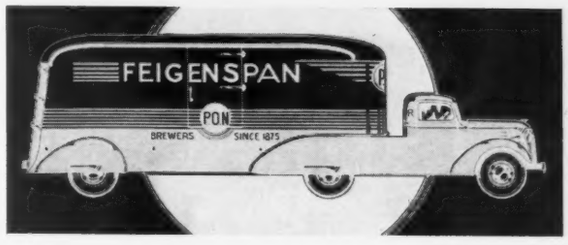
Unlike designers in other modes of transportation such as railroads, airplanes and pleasure cars who are giving a great deal of emphasis to speed, appearance and production costs, commercial body designers have lagged far behind and are today just beginning to modernize the appearance and construction of bodies. It has been the most common practice in the past to either build a body from photographs or like some body previously built with minor changes to alter its appearance. With the constant development of new materials, stampings, etc., the possibilities open to the builder and fleet operator toward the development of truly modern commercial bodies are unlimited.

Before considering the detailed prob-



trailer body and the stake body above it are also of his design and illustrate the possibilities of incorporating style with utility in body design





lems involved in creating and working out a new design, I would like to discuss the benefits to be derived both by the fleet operator and the body builder.

The fleet operator with the aid of a designer could create a body which would fit his vocation and do its work in the most efficient manner and at the same time in appearance it would be a distinct and attractive advertisement for his business. In addition to this a study of the proper materials of which to construct the body will allow the operator to prepare specifications to be followed in the building of the body. Thus having given this preliminary study, the designed body would have utility, appearance and sturdy and lasting construction.

A body builder, by preliminary study and design, can create a body which will best fit his production conditions, help him determine the cost of the body and aid him in the purchase of materials. Most important of all, he can create new designs of bodies to fit particular vocational needs. With each new vocational body designed for products such as milk, ice cream, bread or parcel packages the builder opens up a market for himself in that field.

Going back now to the actual design of a vocational body for a fleet operator, let us consider what transpires during the development of the body. In order not to limit the scope of materials, etc., possible to use let us consider fleet bodies in general rather than any one particular vocation. In this way we will get a much broader scope of requirements to be met and a better idea of available materials and where they may be best applied.

WHEN the designer enters the picture regardless of the vocation in which the body is to be used, he should first arrange a consultation to discuss requirements of the body. During these preliminary discussions the body is designed in word pictures of which the designer must make careful notes from (TURN TO PAGE 80)

ICC C & D Decision

By
HALL JOHNSTON
Former ICC Attorney-Examiner
Now Engaged in Private
Practice in Washington

Motor Carrier Division Splits On Interpretation of the Federal Motor Carrier Act in Granting Contract Carrier Application to Scott Brothers, Inc.

A HIGH official of the Interstate Commerce Commission is credited with the prediction that supervision of trucks and buses is impossible of accomplishment under the Motor Carrier Act, due to the size of the job that Congress has wished on the Commission.

A decision just issued by Division 5, entitled "Scott Brothers Incorporated. Collection and Delivery Service," illustrates the almost hopeless confusion now existing in the minds of both the Commission and the industry in any attempts to interpret the provisions of the Act. At the argument four different counsel expressed almost totally differing views as to what the statute means. Division 5, consisting of Commissioners Eastman, Lee and Caskie, found themselves floundering in such differing views that Chairman Eastman presented the decision with an apology, frankly admitting that the decision might form a basis for reconsideration by the Commission rather than as a final expression of its views. It was his thought that the light thrown on the subject by the two differing opinions might help to clarify the situation when the matter again is presented to the Commission.

In the Scott Brothers case the corporation applied for a permit to engage in the business of a contract carrier. The corporation, wholly controlled by the Pennsylvania and Long Island railroads, which it served exclusively, performed a collection and delivery service in Jersey City, N. J., and certain portions of New York City. Since it performed no other service, its operations were a part of the railroad service, extending it to the points of delivery. The primary questions involved were whether the controlled service performed by the corporation rendered it a common carrier, a contract carrier, or merely an agent of the controlling railroads. It will be noted that the corporation had no relations whatsoever with the shipping public and its responsibility was wholly to the railroads employing the service. This creates a further question as to whether or not the acts of the corporation were the operations of carriers by rail rather than carriers by motor vehicle.

The majority opinion is long and

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Director, staff and field representatives of the National Highway Users Conference shown above are: (front row left to right) George Gray, Kansas City; J. H. Williams, assistant director; R. F. Britton, director; Dawes Brisbine, research counsel and author of the accompanying article; I. L. Smith, information. (Back row): John Gren, New York City; John Springer, San Francisco; Ray Blair, Little Rock, Ark.; P. D. McLean, Raleigh, N. C.; R. E. MacCleery, Boston; Ross Barrett, Jr., Chicago. One of the functions of the NHUC is to study and analyze policies of taxation, act as a coordinating agency and serve as a clearing house on information relative to national and state motor vehicle taxation and highway problems.

Trends of LEGISLATION

With Sights Trained On Legislatures Which Met This Year, the Author Discusses What Has Happened To-Date and What May Happen Later Concerning Fuel Taxes, Registration Fees, Diversion, Reciprocity, Regulation and Sizes and Weights

By **DAWES E. BRISBINE**, Research Counsel, National Highway Users Conference

YEAR by year the problems confronting lawmakers have developed increasing perplexities. Normal sources of revenue diminished alarmingly during the years 1930 to 1936 and such fiscal improvements as may have been observed during the past eighteen months have not had time to be reflected in the receipts of state and local taxing agencies. Also, there has been widespread assumption of governmental responsibility for protection of the aged and jobless. To a large extent these new obligations have been forced upon the states. Devastating floods, widespread droughts, suffocating dust storms, and paralyzing strikes have added their burdens to the conscientious legislator.

This was the backdrop on the legislative stage as the curtain arose on the first act of 1937. Of the 43 legislatures holding regular sessions this year, all have adjourned except those of Illinois, Michigan, New Hampshire and Wisconsin, at the time this is written, and New Jersey, recessed in May, will have reconvened June 26.

In addition to those regularly assembled, a short special session was held in Kentucky. Alabama, carrying over from last year, did not adjourn its very busy special session until February 26. The legislatures of Louisiana, Mississippi, and Virginia are the only ones that have not been seated during the present year.

More than 7000 bills thus far have been introduced directly affecting the motorist, highways, and highway transportation. Still more amazing is the fact that more than 1100 of these bills have already been written into the law of the land.

It is safe to assert that highway use has been the target of more bills and more enacted legislation than any other form of human activity during this

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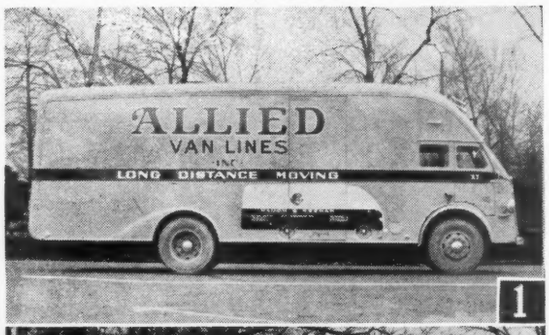

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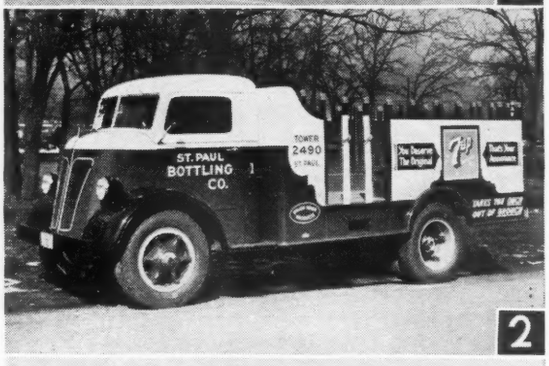

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EXAMPLES OF MODERN TRUCK

1. TO AUTOCAR AND GERSTENSLAGER who built the chassis and body respectively, go credit for this splendid truck. The Autocar chassis is a model UD of 180-in. wheelbase. The Wooster, Ohio, body builder made this body to specifications of operators Haugh & Keenan of Pittsburgh. Somewhere under that body is a 68-gal. auxiliary tank.

2. FEDERAL built this attractive cab-over-engine stake job for St. Paul Bottling Co. The Federal is a model 75 of 132-in. wheelbase. Capacity is 1½ to 2½-tons. The special low-floor bottler's body is 12 ft. long. 7Up rides high, wide and handsome on this truck.

3. WALTER'S heavy-duty dumper shown is a four-point-positive drive model FCRD with a 120 hp. engine. Capacity is 7-10 tons. The novel shaped body is a sugar scoop type of 8-yd. capacity. Twin telescopic hoists dump the body to an angle of 70 deg. and the rear of the body may be used for bulldozing when necessary.

4. GMC adds beauty and utility to the front-end while TRUXMORE adds utility to the rear for this general express job. It is a model F 33 cab-over-engine GMC chassis of 160-in. wheelbase. The third axle is a model 30. The body is a semi-van, open top type 20 ft. long by 7 ft. 4 in. wide and 6 ft. 2 in. high. Gross load capacity is 34,000 lb. Covered with 22 gauge steel, the body has a wood understructure.

5. SIXTEEN tons is just pie for this powerful looking job. The FWD is a model T-40, and is equipped with an auxiliary axle. The open trailer body gets its lift from two powerful, hydraulic, telescoping hoists. Cleveland-Cliffs Iron Co., Green Bay, Wis., uses it for toting coal. FRUEHAUF trailer. GAR WOOD body and hoist.

6. THIS all-steel, all-welded trailer van was built by TRAILER CO. OF AMERICA and is mounted on a Trailmobile model H trailer chassis. Panels of the body are interlocking and welded

The ALBUM

TRANSPORTATION EQUIPMENT

into an integral unit. Panels are of corrugated steel. The effect of the corrugation is to protect the recessed lettering against scraping. The tractor is a model D INTERNATIONAL.

7. HIGHWAY TRAILER is no burden to Borden who operates this refrigerator body made by Highway and mounted on a model 77 Highway trailer chassis. Body is insulated in the floor, ceiling and walls. Its custom construction features an electrically welded floor pan and theft-proof locks and hardware. Tractor is a WHITE.

8. THIS improved F-type FRUEHAUF trailer has "snap" literally and figuratively. The panels of the body can be removed individually. Mouldings "snap on." Panels are backed with Plywood. Beneath the snap-on moulding are lapping type weather proof seams. Tailgate, uprights, cross-bars and roof bows now come as regular parts and the whole job is easily serviceable. Tractor is a CHEVROLET.

9. THIS attractive looking truck with stake body is a STEWART 2-3 ton job with de luxe cab. The body is full-skirted with a low-loading bed and is especially designed for case and barrel delivery. Krantz Distributing Co., Williamsville, N. Y., is the proud owner.

10. THIS nifty job is the creation of KINGHAM TRAILER CO. Trailer is a model H-30 on which is mounted a No. 70 vertical round front all-steel van 30 ft. long. Rear has a beaver tail. Nose features a special vent. The frame has a 14-in. drop. Tractor is a DIAMOND T.

11. REO built this truck especially for the weights and measure department of Lansing, Mich. The truck, used for testing large scales, is equipped with a power operated hoist and a lift block which travels on an overhead crane. (Note the rear close-up.) A total of 10 test weights of 1000 lbs. each and other equipment are toted about.

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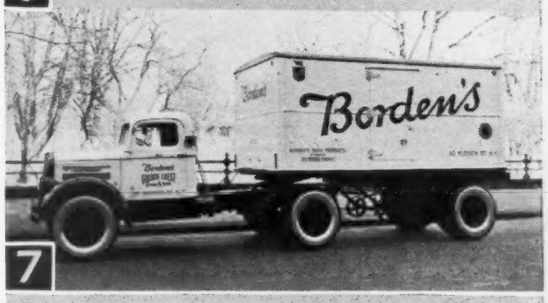

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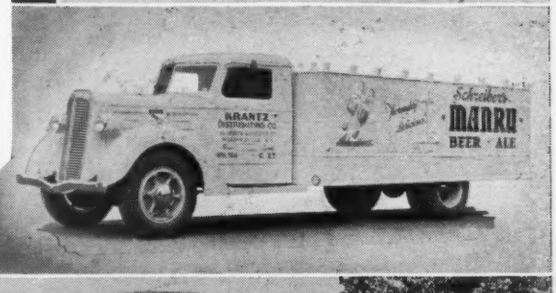

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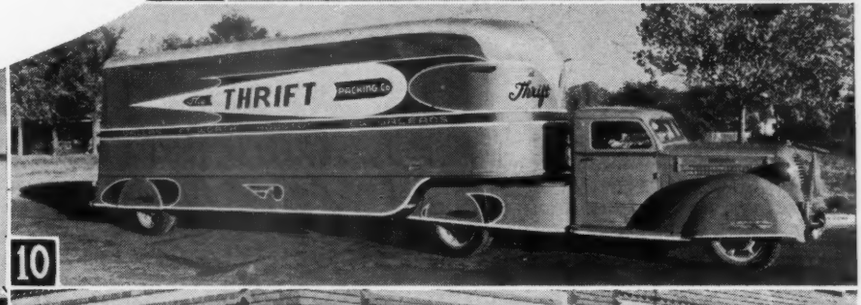

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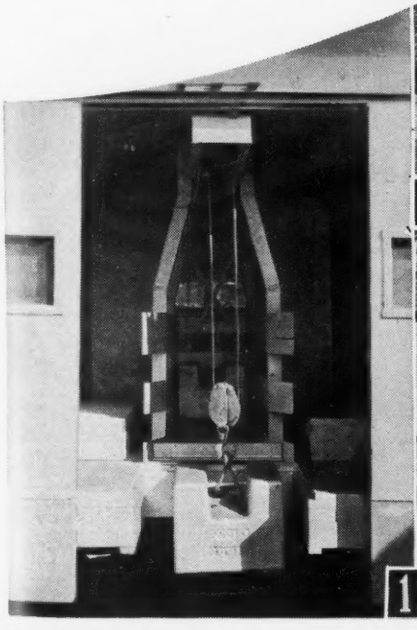
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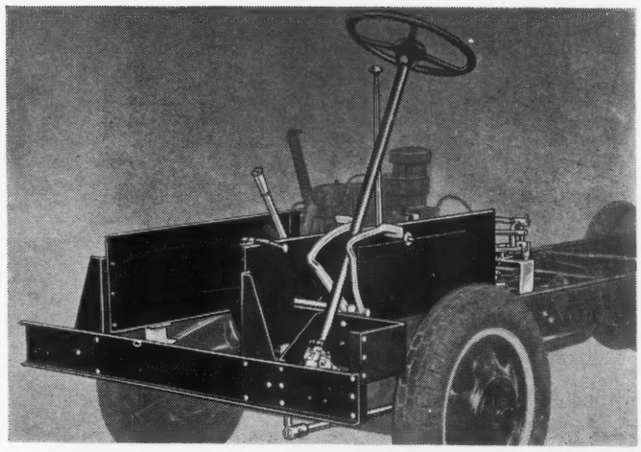
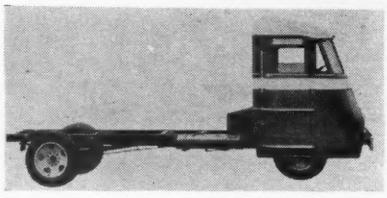
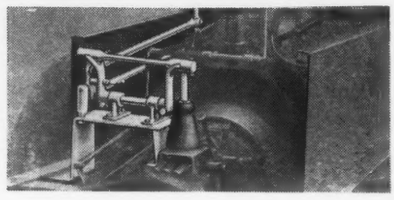
Gemmer Forward Control Conversion is Complete Package







Top—Forward control unit mounted on chassis. Above left—Showing converted chassis. Above right—Showing the remote control unit

CONVENTIONAL trucks can be converted to camelbacks in the fleet shop by using the forward control conversion unit produced by the Wickett Motor Service Corp., Richmond, Ind. It comes disassembled in a small economic package known as the Gemmer Forward Control Conversion.

Included in the package is a heavy duty Ross steering gear which in conjunction with reinforcing leaves for the front springs and spring clips for installing them gives the front end greater capacity. The forward remote gear shift control is patented.

The driver is moved forward 45 in. to 57 in. and is supplied with a larger steering wheel and special brake and clutch pedals. All of the tubes, connections, starter control, etc., are supplied.

The unit which comes in four models can be easily installed and can be removed from one truck and installed upon another. Access to the engine is provided through service plates on the sides or from the top and bottom. In most cases the engine can be completely removed in two hours. Units for export are handled by the Wayne Corp., Richmond, Ind.

York-Hoover All-Steel Body Has Sectional Construction

THE York-Hoover Body Corp., York, Pa., has a new all steel body designed particularly for milk delivery, known as series 2000. This body is so constructed that it will mount on a wide range of chassis models.

Features include two sectional sliding doors with entirely new lock which operates with a minimum of effort due to the freedom offered by steel construction. Step wells are especially deep on each side.

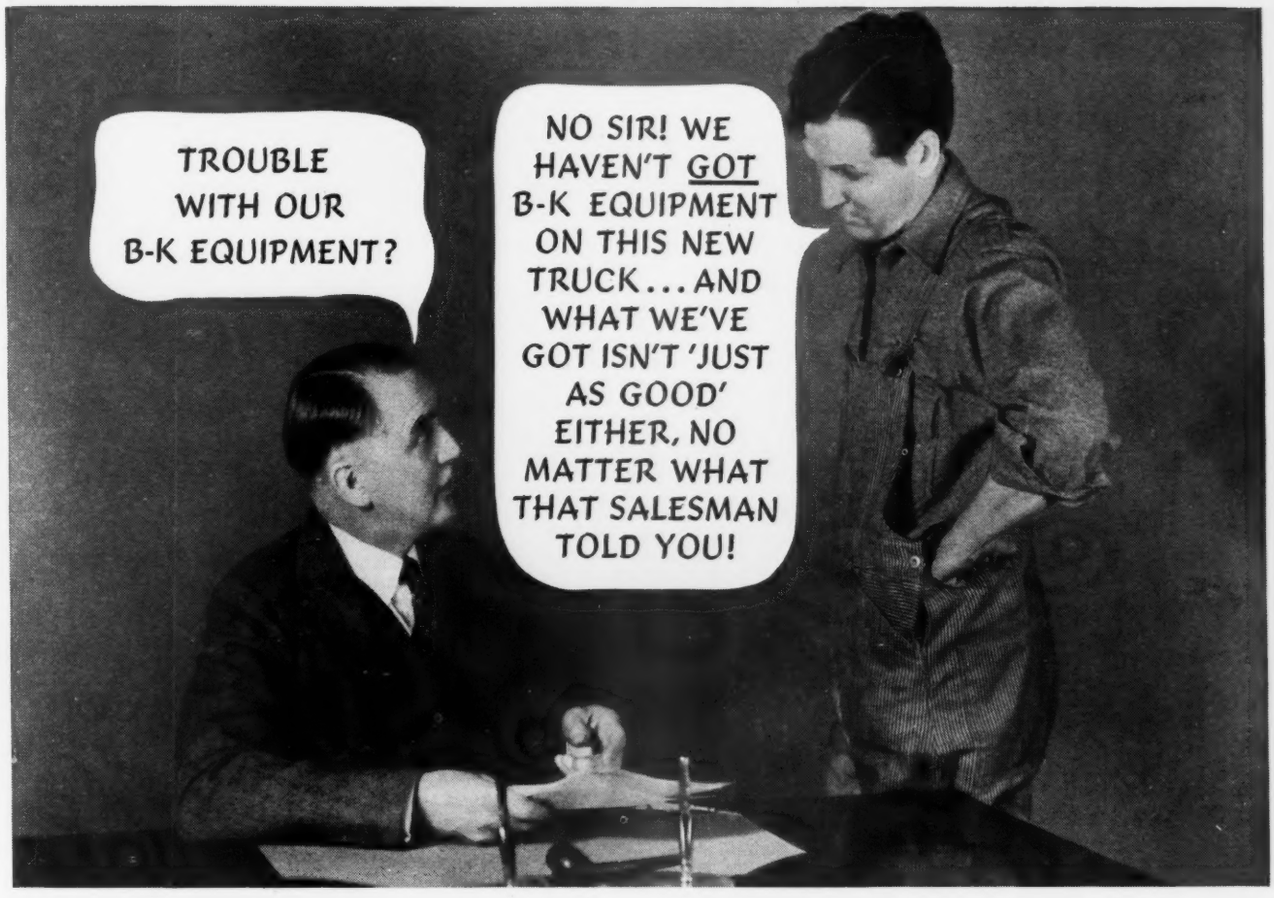
A comfortable seat, new in design, drops at a touch beneath the steering wheel entirely out of the zone of driver operation. All glass at sides and rear actually floats in a specially moulded rubber frame. Sliding door tracks at bottom are self cleaning.

Due to sectional construction parts can be readily obtained and installed.

Series 2000 body is built with minimum length of three cases, four cases wide providing capacity of 32 to 44 cases. The four case long body loads 42 to 58 cases.

New Truck Registrations by Makes by Months

	Autocar	Brockway	Chevrolet	Diamond T	Dodge	Federal	Ford	G.M.C.	International	Mack	Reo	Sterling	Stewart	Studebaker	White-Indiana	Miscellaneous	Total
January.....1937	130	102	14,362	863	3,764	207	16,544	2,820	6,244	389	354	29	92	169	592	948	47,609
January.....1936	75	94	15,124	495	6,207	223	14,606	428	4,743	90	339	8	85	143	493	607	43,760
February.....1937	112	115	7,939	602	5,043	206	16,460	3,501	5,256	364	317	26	101	222	550	1,451	41,815
February.....1936	57	88	14,978	510	5,556	170	12,226	758	4,365	107	217	4	62	134	408	661	40,301
March.....1937	179	140	17,164	849	6,498	241	20,839	4,201	5,820	480	495	23	149	478	655	2,080	60,291
March.....1936	88	127	19,511	634	6,751	205	16,168	1,551	5,395	134	264	17	73	221	477	762	52,428
April.....1937	228	184	22,709	916	4,090	258	22,897	4,815	6,894	594	394	47	121	725	819	2,193	67,884
April.....1936	121	179	23,323	784	8,817	271	18,493	2,733	7,308	289	379	21	112	327	700	1,099	64,956
4 Months.....1937	649	541	62,174	3,230	19,395	912	76,740	14,887	24,214	1,827	1,560	125	463	1,594	2,616	6,672	217,599
4 Months.....1936	341	488	72,936	2,423	27,331	869	61,493	5,470	21,811	670	1,199	50	332	825	2,078	3,129	201,445
% Change...4 Mos.	+90	+11	−15	+33	−29	+5	+25	+172	+11	+173	+30	+150	+39	+93	+26	+113	+8



Make *Sure* it's BENDIX B-K

IF YOU WANT TO BE SURE IT'S GOOD!

● The way to get the positive, service-saving, property-protecting, life-guarding satisfaction of Bendix B-K Power Braking is to make *sure* the Power Braking you get on your new vehicles, or install on your older ones, is genuine Bendix B-K Controlled Vacuum Power Braking.

It's the *only* way, and we can prove it. All we'd need to do would be to show you some of the letters we've received from truck owners who *thought* they were getting Bendix B-K, but got something else instead. Then, when the troubles arose, they wrote indignantly to Bendix! There's nothing to do about it but tell you, and all other Power Brake users, and to remind you of this fact:

96% of all Power Braking installations in service are Bendix . . . there must be reasons!

There *are* reasons, and the most important of them are listed at the right!

BENDIX PRODUCTS CORPORATION
(Subsidiary of Bendix Aviation Corporation) SOUTH BEND, INDIANA

BEST BECAUSE OF:

- ★ Least Weight Added
- ★ Fewest Added Parts
- ★ Low First Cost
- ★ Practically No Maintenance
- ★ Instant Remote Control
- ★ All Emergency Features of Train Operation
- ★ Quickly Installed
- ★ Original Brake System Left Intact
- ★ Fully Controlled Power Application
- ★ A Nation-Wide Exchange Plan
- ★ A Nation-Wide Service Organization
- ★ Years of Power Braking Experience and Unapproached Protection Over Future Years of Service

BENDIX

BK VACUUM POWER BRAKING A BENDIX PRODUCT

Controlled Vacuum

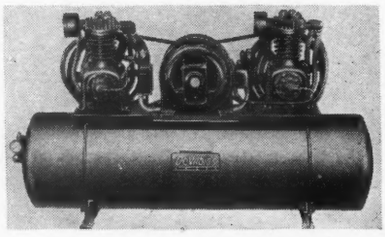
POWER BRAKING

New Products ON PARADE

Compressor

DeVILBISS CO. has announced four new air compressing outfits available in 7½ or 10 hp. with single or two stage compressors available with either horsepower. Two compressors, each developing a maximum pressure of 200 lbs. with the two stage compressors of 150 lbs. with the single stage, are firmly mounted on opposite ends of the 20 x 60 in. air tank. The motor driving both compressors is set between them on the air tank.

Each compressor has a "V" belt drive, combination air strainer and muffler, check valve, inter and after cooler, and centrifugal pressure release mechanism set to cut in at 160 lbs. and cut out at 200 lbs. on the two stage, and in at 80 lbs. and out at 100 lbs. on single stage compressor. Displacement of outfits varies from 31½ to 57 cubic feet of free air per minute, depending upon pressure and horsepower. Air tank capacity of both 7½ and 10 H.P. outfits is 10.88 cubic feet. A larger tank is available.



DeVilbiss Compressor

Diesel Fulflo Filter

COMMERCIAL FILTERS CORP., 89 Broad street, Boston, has perfected a fuel oil filter for diesel engines. The Fulflo filter tube is constructed of cotton yarn and wound into tube form upon a metal core to provide a compact filter element and ease of assembly.

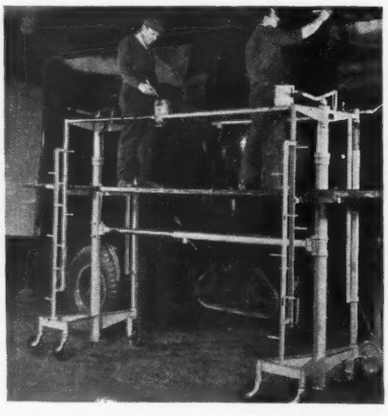
The filter tube in turn is mounted on two seat plates having a patented recessed centre which seals both ends to prevent bypassing of unfiltered oil. The tube assembly is then held in place in the filter shell by spring tension to compensate for varying pressures.

Based upon the principle of Depth Filtration with uniform density, the filter will handle any grade of fuel oil at any temperature and against pressure of from one to 100 lbs. per square inch without modifying the filtering element.

The Fulflo Filter is generally installed between the transfer pump and the Injector pumps, taking the full flow of fuel oil with a very low pressure drop. Other installations upon stationary Diesel engines may be made either upon the pressure discharge to the day tank or by gravity flow to the engine.

Diesel Fulflo Filter

Hydraulically Operated Scaffold



Hydraulic Scaffold

A NEW and novel piece of equipment is the DecoVator manufactured by the Decovator Scaffolding Corp., 2988 East Grand Boulevard, Detroit. This is a demountable hydraulic scaffold that may be raised, lowered, extended or contracted, and driven from one vantage point to another by mechanical means actuated from the working platform. The scaffold is made entirely of steel; it is light in weight and its parts are easily disassembled and transported for quick assembly. In its assembled state, the DecoVator scaffold provides its own ladder as well as benches for tools and materials, and the complete lifting and traveling mechanism. The reach of the hydraulically raised and lowered platform is considerable; one DecoVator model is from 2 ft. 8 in. in the lowest position to a height that will enable a man to work comfortably up to 16 ft. For a second model the low point is 3 ft. 2 in. and men can service work up to 22 ft. high.

Zol-Tane for Radiators

BRAKESTONE & THORNTON, subsidiary of Universal Chemists, Boston, is manufacturing Zol-Tane, a scientific rust preventive designed to protect the cooling

system of engines. It prevents rust, scale, galvanic and electrolytic action and corrosion. According to the manufacturer it is harmless to metals, rubber hose connections, gaskets and pump packings. It may be used in alcohol, glycerine, etc. One can in a cooling system with a capacity of 5½ gal. will suffice.

Loosite Dissolvent

LOOSITE, a liquid compound for dissolving sludge formations and oil residues as well as for cleaning the crankcase, is a product of the Petroleum Solvent Corp., Long Island City, New York. A can of Loosite in the crankcase oil for 20 minutes with the engine running is said to loosen and remove foreign residue with draining.

[More Products Page 42]

since we standardized on Exide 'Commercials'"

THERE is no longer any need to rely on batteries built for lighter service... batteries that may perform dependably in pleasure cars but fail to deliver the long life in fleet service that helps to keep hauling costs low. Exide Commercial Type Batteries fit 90% of all commercial vehicles.

Fleet-owners have received these batteries with enthusiasm, for they offer to light commercial units of all types the same high degree of dependability and trouble-free performance that Exide heavy-duty batteries have always provided for large trucks. Already, these new Exides are reducing battery maintenance costs in fleets from coast to coast. See your Exide Wholesaler today for the facts on this entire line.

Exide

COMMERCIAL TYPE BATTERIES

WITH MIPOR AND SLOTTED RUBBER

"MIPOR," Reg. U. S. Pat. Off.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

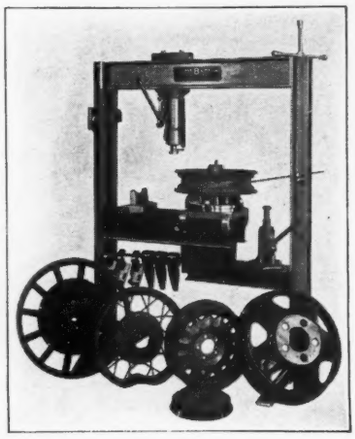
The World's Largest Manufacturers of Storage Batteries for Every Purpose

Exide Batteries of Canada, Limited, Toronto

New Products ON PARADE

Wheel Aligner

BEE LINE MFG. CO., Davenport, Iowa, offers a wheel repair machine built for turning and repairing all types of wheels, hubs and brake drums for cars, trucks, and buses. The frame is an all welded unit. One end of the frame contains an adjustable jack holder for handling horizontal operations, such as correcting eccentric wheels and removing flat spots. A sensitive gauge is attached to the other



end of the frame and its primary purpose is for accurately checking bent wheels before the operation and checking the finished wheel before removing it from the universal hub, which is the outstanding mechanism around which the entire machine is built. The hub is mounted on sensitive ball bearings so that the wheel will spin easily for checking and has an automatic refractable ball race which prevents damage to the ball bearings by accuracy of the hub unit.

Magnus Cleaner

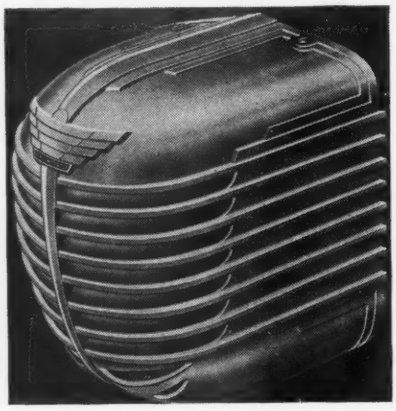
MAGNUS No. 78 is used for the cold cleaning of metal parts by the Magnus process of emulsion degreasing. It is non-corrosive to metal. It will attack paint. Other uses are for cleaning burned-on carbon on pistons, cleaning connecting rods, renovating fuel pumps, carburetors, etc., degassing of gas tanks before welding, cleaning air filters and cleaning burned-on oil from crank shafts.—Magnus Chemical Co., Garwood, N. J.

Sunco Soundmaster

A SOUND reinforcing amplifier system with 2400 times more audio power than the human voice in a case only 13½ x 13½ x 9" deep is a feature of the new Sunco Soundmaster, a product of Sundt Engineering Co., 4238 Lincoln Ave., Chicago. The Soundmaster is equipped with a 12-in. 15 watt speaker which gives large air displacement and thus great carrying power without the effect of loudness. It operates directly from 110 volt, 50 to 60 cycle lines, and converters for battery operation can be furnished. The price complete—$67.50.

Streamlined Heat

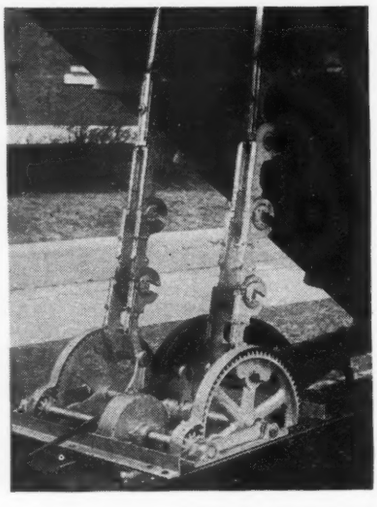
FRANCISCO AUTO HEATER CO., Columbus, Ohio, has designed a new hot water heater of moulded bakelite fully streamlined. Specially designed deflectors distribute the flow of air outward, upward,



downward and sideways evenly. No deflector adjustment is necessary. The heater may be obtained in different colors and is priced from $12.95 upward. A model with die cast front is $9.95.

Kyle Hoist

THE POWERFUL lifting action of the Kyle hoist for truck bodies is accomplished by means of segmented jacks which lock into absolutely rigid trusts or tension members and they are unwrapped, section by section, from the triplex pin spiders. The power of the jacks is the same in either



tension or compression, and they automatically lock the body in any position. Thus the unit can be used not only to elevate the body and load, but also as a hoisting mechanism. The hoist is driven from a conventional power take-off applied to the transmission through two universal joints to a bronze worm reduction gear. A hand hoist of the same type is available, which has no worm gear, but is locked with pawls rather than the worm.

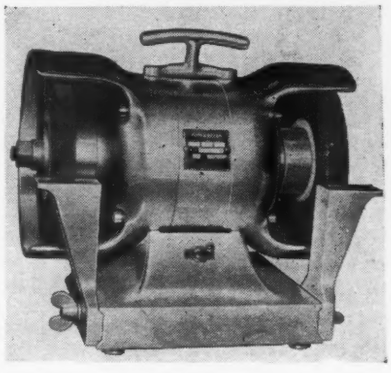
Application of the Kyle hoist is easy on any type of bed. Blue prints and bill of material for body construction and all body irons are avilable, so the bodies can be built locally. This hoist is light in weight. Lifting pressure is applied close to the front end of the body in all positions, so that distorting forces appled to the body are reduced to a minimum.

Fibrous Glass Insulation

A NEW type of insulating blanket of fibrous glass for refrigerated truck bodies and for automobiles, trailers, buses, etc., is now available from the Armstrong Cork Products Co., Lancaster, Pa. The product is stitched blankets of wool, made by the Corning Glass Works, Corning, N. Y., and sold by Armstrong. This insulation in blanket form can be obtained in thicknesses from three-quarters of an inch to five in., and in sizes up to 9 ft. by 50 ft., or longer if required. It may be faced on one or both sides with muslin, or any specified material.

Bench Grinder

BLACK & DECKER MFG. CO., Towson, Md., announces a new 6 in. Junior ball-bearing bench grinder to sell for $19.95.



Sturdy and well-balanced for practical shop use, it is finished in aluminum. Powered by a standard constant speed motor of full ¼ h.p. rating (except 25 cycle, which is 1/5 h.p.) and can be obtained in all standard A.C. single phase voltages and cycles. Included as standard equipment are one fine and one medium wheel (each being full size 6 in. diameter by ⅝ in. face by ½ in. hole); also a 3 conductor cable (2 leads and 1 ground connection). Total net weight is 13½ lbs. Overall spindle length, 12¼ in.

Pyralux Finish

AN AUTOMOTIVE finish known as Automotive Pyralux is announced by E. I. du Pont de Nemours & Co. Designed chiefly for touching-up synthetic resin finishes and for refinishing, it combines the quick-drying qualities of lacquers and the lustre of synthetic resin enamels, requiring no rubbing. Its chalking resistance is comparable to that of baking enamel. The new finish is offered in black and twenty-six shades.

Commercial Car Journal SEMI-TRAILER Specifications Table

(See Explanatory Notes, page 46;

SEMI-TRAILER MAKE AND MODEL	CHASSIS: Price (f. o. b. factory—see Note)	CHASSIS: Maximum Body and Payload Rating (based on Axle Rating)	CHASSIS: Chassis Weight (includes weight of items included in Price.)	TIRE SIZE: Standard	TIRE SIZE: Maximum Size Recommended	FRAME: Length: Standard (ft.)	FRAME: Length: Longest Standard (at Extra Cost)	FRAME: Height (in.)	FRAME: Side-Rail Size and Type	FRAME: Drop (in.)	FRAME: Heat-Treated	FRAME: No. and Type of Cross-Members	SPRINGS: Size	SPRINGS: Number Leaves	SPRINGS: Shackle Type	SPRINGS: Helper Springs	SPRINGS: Number of Helper Leaves	Radius Rods	BRAKES: Make, Type and Actuation	BRAKES: Drum Diameter and Width	BRAKES: Drum Material	BRAKES: Brake Lining Area	BRAKES: Automatic Emergency	AXLE: Make	AXLE: Maximum Rating (lb.)	AXLE: Beam Section Dimension	AXLE: Beam Type	AXLE: Spindle Diameter (at Inner Bearing)	% Body & Payload on Axle	Landing Gear Type and Actuation	Distance: Kingpin to Front of Frame	FIFTH WHEEL (to match standard upper half): Make and Type	FIFTH WHEEL: Width	FIFTH WHEEL: Price (lower half)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
TWO-WHEEL																																		
AVAILABLE																																		
F-10	650	16000	2650	8.25/20D	34x7D	16	Opt	37	7½x2½x¼C	5	N	6C	42x3	8	S	Y	5	Y	LHV	16x3½	CI	210	O	Tim	11000	4½x1½	Tu	2⅝	60	HM	Opt	Own-D	30	75
F-12	745	20000	3100	9.00 20D	36x8D	18	Opt	38½	8x2½x¼C	5	N	6C	42x3	8	S	Y	5	Y	LHV	16x3½	CI	210	O	Tim	13.00	4½x5⅝	Tu	2¾	60	HM	Opt	Own-D	30	75
F-16	950	24000	3650	9.75/20D	9.75/20D	20	Opt	41½	9¾x2½x⅜C	5	N	7C	42x3	10	S	Y	5	Y	LHV	17¼x4	CI	256	O	Tim	16000	5x½	Tu	3	60	HM	Opt	Own-D	30	75
B. & J.																																		
Super	541	10000	2100	6.00/20D	34x7D	16	20	40	8x2½x¼C	5	N	6C	42x3	10	B	N	N	Y	BHV	16x2½	CS	176	Y	Tim	10000	4x1½	Tu	2⅝	55	S	17	Aus-D	27	75
300A	837	12000	2800	32x6D	9.75 20D	18	24	42	10x2½x⅜	5	N	7C	42x3	11	B	N	N	Y	BHV	17¼x3	CS	238	Y	Tim	12000	4½x1½	Tu	2¾	55	S	17	Aus-D	33	100
400A	1005	16000	3400	8.25 20D	10.50/20D	18	26	43¾	10x2½x⅜	5	N	7C	42x3	12	B	N	N	Y	BHV	17¼x4	CS	296	Y	Tim	16000	5x½	Tu	3	55	S	17	Aus-D	33	100
200-B	783	12000	2670	7.50/20D	34x7D	16	22	38	8x2½x¼C	5	N	6C	42x3	11	B	G	C	Y	TMV	16x3½	CS	238	Y	Tim	12000	4½x1½	Tu	2¾	57	HM	17	Own D	27	75
300-B	963	15000	3100	34x7D	9.75/20D	18	24	40	10x2½x¼C	5	N	7C	42x3	12	B	G	C	Y	TMV	17¼x4	CS	288	Y	Tim	15000	4½x5⅝	Tu	2⅞	57	HM	17	Own D	30	85
400-B	1298	18000	3500	9.75/20D	10.50/20D	18	26	41	10x2½x¼C	5	N	7C	42x3	14	B	G	C	Y	TMV	17¼x5	CS	347	Y	Tim	18000	5x½	Tu	3¼	57	HM	17	Own D	33	110
CORBITT																																		
T-10	575	16000	†	6.50 20D	34x7D	16	20	38	9¾x2½x¼C	5	N	5C	54x3	20	S	Y	6	N	TMV	16x3½	CI	236	N	Tim	10000	4x1½	Tu	2⅝	60	None	20	Aus-D	24	78
T-12	725	20000	†	7.50 20D	9.00 20D	18	22	39	9¾x2½x⅜C	5	N	5C	54x3	20	S	Y	6	N	TMV	17¼x4	CI	284	N	Tim	12000	4½x5⅝	Tu	2¾	60	None	20	Aus-D	33	85
T-14	895	24000	†	8.25 20D	9.75 20D	20	24	40½	9¾x2½x⅜C	5	N	6C	54x3	20	S	Y	6	N	TMV	17¼x4	CI	284	N	Tim	14000	4½x1½	Tu	2⅞	60	None	20	Aus-D	33	85
T-16	1050	28000	†	9.00 20D	9.75 22D	22	24	41½	9¾x3x⅝C	5	Y	6C	54x3	24	S	Y	6	N	TMA	17¼x5½	CI	358	N	Tim	16000	5x½	Tu	3	60	None	20	Aus-D	33	85
T-18	1360	32000	†	36x8D	10.50/22D	24	27	40½	9¾x3x⅝C	5	Y	7C	48x4	21	S	Y	6	Y	TMA	17¼x5½	CI	358	N	Tim	18000	5½x1½	Tu	3½	60	None	20	Aus-D	33	85
DORSEY																																		
D-8	560	20000	1925	32x6D	9.00/20D	16	24	43	10x2½x3C	5	N	5C	45x3	12	B	N	5	O	BMV	16x2½	CS	400	O	Own	10000	2¾x3	Re	2⅝	55	XM	15	Own-P	26	SE
E-8	620	20000	1875	32x6D	9.00/20D	16	24	34	10x2½x3C	14	N	5C	45x3	12	B	N	5	O	BMV	16x2½	AI	400	O	Own	10000	2¾x3	Re	2⅝	55	XM	15	Own-P	26	SE
D-10	700	24000	2175	32x6D	9.75 20D	20	24	43	10x2½x3C	5	N	6	45x3	15	B	Y	5	O	BMV	17¼x3	CI	515	O	.....	12000	3x3	IB	2¾	55	XM	15	Own-P	26	SE
EDWARDS																																		
A-31	780	19400	2600	7.50/20D	9.00/20D	16	Opt	Opt	9⅝x2½x¼C	5	N	8C	42x3	11	B	Y	5	Y	BMV	16x2½	CS	174	O	Tim	10000	4x½	Tu	2⅝	55	M	Opt	Own	30	75
A-3	850	19400	2800	7.50 20D	9.00 20D	16	Opt	Opt	9⅝x2½x¼C	5	N	8C	42x3	11	B	Y	5	Y	BMV	17¼x3	CS	218	O	Tim	10000	4x½	Tu	2½	55	M	Opt	Own	30	75
A-41	965	24200	3000	8.25/20D	9.75/20D	18	Opt	Opt	9¾ x2½x⅜C	5	N	8C	42x3	13	B	Y	5	Y	BMV	17¼x3	CS	218	O	Tim	13000	4½x5⅝	Tu	2⅞	55	M	Opt	Own	30	75
A-51	1085	29000	3260	9.00/20D	10.55 22D	18	Opt	Opt	9¾x2½x⅜C	5	N	8C	42x3	15	B	Y	5	Y	BMV	17¼x4	CS	290	O	Tim	15000	5x½	Tu	3⅛	55	M	Opt	Own	30	75
FITZ GIBBON & CRISP																																		
UNIVERSAL-110	638	18000	2165	7.00/20D	8.25/20D	16	24	37	8x2½x¼C	5	N	5C	42x3	10	B	Y	7	N	BMV	16x2½	CN	175	O	Tim	10000	4x½	Tu	2⅝	55	HM	17	Aus-D	27	75
210	812	20500	2490	7.50/20D	9.00/20D	16	26	39	9⅝x2½x¼C	5	N	6C	42x3	12	B	Y	7	N	TMV	16x3½	CN	238	O	Tim	12000	4½x5⅝	Tu	2¾	55	HM	17	Aus-D	27	75
216	1051	25500	3475	9.00 20D	9.75/24D	18	26	40	9¾x2½x⅜C	5	N	7C	48x3	15	B	Y	7	N	TMV	17¼x4	CN	288	O	Tim	16000	5x½	Tu	3	55	HM	17	Aus-D	33	85
316	1200	28250	3905	9.75 20D	9.75/24D	18	26	42	10½x3x¼C	6	N	7C	48x3½	14	B	Y	7	N	TMV	17¼x4	CN	288	O	Tim	16000	5x½	Tu	3	55	HM	17	Aus-D	33	85
110DF	718	18000	2205	7.00/20D	8.25/20D	16	24	33	10½x2½x⅜C	14	N	5C	42x3	10	B	Y	7	N	BMV	16x2½	CN	175	O	Tim	10000	4x½	Tu	2⅝	55	HM	29½	Aus-D	27	75
316DF	1280	28250	3980	9.25/20D	9.75/24D	18	26	36	10½x3x⅜C	18	N	7C	48x3½	14	B	Y	7	N	TMV	17¼x4	CN	288	O	Tim	16000	5x½	Tu	3	55	HM	40½	Aus-D	33	85
GENERAL MOTORS																																		
TT-218 (10,000-lb. axle)	575	14000	2215	30x5D	34x7D	16	20	38¼	8¾x3x¼C	6	N	6C	45x3	9	B	Y	6	Y	BMV	17⅛x3	NI	209	O	Tim	10000	4x½	Tu	2⅝	57	HM	18	Own-D	27	60
TT-218 (12,000-lb. axle)	785	17000	2710	34x7D	36x8D	16	20	40¼	8¾x3x¼C	6	N	6C	45x3	10	B	Y	6	Y	BMV	17¼x4	NI	279	O	Tim	12000	4½x5⅝	Tu	2¾	57	HM	18	Own-D	27	60
TT-218H	850	22000	2820	34x7D	9.75 24D	16	20	41	8¾x3x¼C	6	N	6C	45x3	10	B	Y	6	Y	BMV	17¼x4	NI	279	O	Tim	15000	4½x1½	Tu	2⅞	57	HM	18	Own-D	33	90
TT-252	1075	28500	3320	34x7D	10.50 24D	18	22	40	11⅛x3½x¼C	6	N	6C	46x4	10	B	Y	6	Y	TMV	17¼x5	NI	347	O	Tim	18000	5x½	Tu	3	53	HM	18	Own-D	33	90
GRAMM																																		
DF-35	460	15835	2165	6.00/20D	9.00/20D	14	24	36½	9⅝x2½x¼C	5	N	5C	45x3	12	B	Y	8	N	BMV	16x2½	CN	178	O	Tim	11000	4½x1½	Tu	2⅛	60	HM	15	Aus-D	30	80
DF-36	560	15810	2190	6.00 20D	9.00 20D	14	22	36½	10x2¾x¼C	14	N	5C	45x3	12	B	Y	8	N	BMV	16x2½	CN	174	O	Tim	11000	4½x1½	Tu	2⅛	60	HM	15	Aus-D	30	80
DF-70	795	19200	2800	34x7D	9.75 20D	20	24	38½	9⅝x2½x⅜C	5	N	7C	45x3	14	B	Y	10	N	BMV	17¼x3	CN	228	O	Tim	13000	4½x5⅝	Tu	2⅞	60	HM	15	Aus-D	33	90
DF-71	880	19170	2830	34x7D	9.75 20D	20	22	38½	10x2¾x¼C	14	N	7C	45x3	14	B	Y	10	N	BMV	17¼x3	CN	228	O	Tim	13000	4½x5⅝	Tu	2⅞	60	HM	15	Aus-D	33	90
DF-90	940	24000	3.00	34x7D	10.50 20D	20	24	39	9⅝x2½x⅜C	5	N	7C	45x3	16	B	Y	12	N	BMV	17¼x5	CN	280	O	Tim	15600	5x½	Tu	3¼	60	HM	15	Aus-D	33	90
DF-91	1025	23960	3.40	34x7D	10.50 20D	20	22	39	10x2¾x⅜C	14	N	7C	45x3	16	B	Y	12	N	BMV	17¼x5	CN	280	O	Tim	15600	5x½	Tu	3¼	60	HM	15	Aus-D	33	90
HIGHWAY																																		
77-A	510	16000	2100	6.00/20D	7.50/20D	16	24	40¾	9⅞x3¼x⅜	5	N	4C3J	46x3	9	S	Y	5	Y	BMV	16x2½	G	176	O	Own	9000	2x3¼	Re	2⅛	56	HM	15	Mar-D	24	60
77-B	670	20000	2400	7.00 20D	8.25 20D	16	24	42	9⅞x3¼x⅜C	5	N	4C3J	46x3	11	S	Y	5	Y	BMV	17¼x3	G	216	O	Own	12000	2½x3¼	Re	2⅛	56	HM	15	Mar-D	24	60
77-C	925	24000	3250	8.25/20D	9.75/20D	18	24	45	10x3¼x¼C	5	N	4C3J	48x4	12	S	Y	6	Y	BMV	17¼x4	G	288	O	Own	16000	2¾x3½	Re	2⅛	56	HM	15	Mar-D	30	90

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
77-D	1145	28000	3900	9.00/20D	10.50/20D	20	24	47½	12x3 1/16x1/16C	5	N	4C3J	48x4	15	S	Y	6	Y	BMV	17¼x5	G	350	O	Own	18000	2¾x4½	Re	3 5/16	56	HM	18	Mar-D	30	90
87-A	735	16000	2800	6.00/20D	7.50/20D	16	24	40¾	9 7/16x3¼x1/16C	5	N	6C1J	46x3	9	S	Y	5	Y	BMV	16x2½	G	176	O	Own	9000	2x3¼	Re	2 11/16	56	AM	15	Mar-D	30	125
87-B	880	20000	3100	7.00/20D	8.25/20D	16	24	42	9 7/16x3¼x1/16C	5	N	6C1J	46x3	11	S	Y	5	Y	BMV	17¼x3	G	216	O	Own	12000	2½x3¼	Re	2 11/16	56	AM	15	Mar-D	30	125
87-C	1125	24000	3950	8.25/20D	9.75/20D	18	24	45	10x3¼x1/16C	5	N	6C1J	48x4	12	S	Y	6	Y	BMV	17¼x4	G	288	O	Own	16000	2¾x3½	Re	2 11/16	56	AM	15	Mar-D	30	125
87-D	1370	28000	4600	9.00/20D	10.50/20D	20	24	47½	12x3 1/16x1/16C	5	N	6C1J	48x4	15	S	Y	6	Y	BMV	17¼x5	G	350	O	Own	18000	2¾x4½	Re	3 5/16	56	AM	15	Mar-D	30	125
107-A	595	16000	2300	6.00/20D	7.50/20D	16	20	31¼	9 7/16x2¾x1/16C	16	N	4C2J	46x3	9	S	Y	5	Y	BMV	16x2½	G	176	O	Own	9000	2x3¼	Re	2 11/16	56	HM	19	Mar-D	24	60
107-B	740	20000	2600	7.00/20D	8.25/20D	16	20	32¾	9 7/16x2¾x1/16C	16	N	4C2J	46x3	11	S	Y	5	Y	BMV	17¼x3	G	216	O	Own	12000	2½x3¼	Re	2 11/16	56	HM	19	Mar-D	24	60
107-C	1025	24000	3465	8.25/20D	9.75/20D	18	20	33¾	10x3¼x1/16C	18	N	4C2J	48x4	12	S	Y	6	Y	BMV	17¼x4	G	288	O	Own	16000	2¾x3½	Re	2 11/16	56	HM	21	Mar-D	30	90
107-D	1165	28000	4030	9.00/20D	10.50/20D	18	20	36	10x3¼x1/16C	18	N	4C2J	48x4	15	S	Y	6	Y	BMV	17¼x5	G	350	O	Own	18000	2¾x4½	Re	3 5/16	56	HM	21	Mar-D	30	90
117-A	595	16000	2250	6.00 20D	7.50/20D	16	20	31¼	9 7/16x2¾x1/16C	16	N	4C3J	46x3	9	S	Y	5	Y	BMV	16x2½	G	176	O	Own	9000	2x3¼	Re	2 11/16	56	HM	15	Mar-D	24	60
117-B	740	20000	2550	7.00/20D	8.25/20D	16	20	32¾	9 7/16x2¾x1/16C	16	N	4C3J	46x3	11	S	Y	5	Y	BMV	17¼x3	G	216	O	Own	12000	2½x3¼	Re	2 11/16	56	HM	15	Mar-D	24	60
117-C	1025	24000	3415	8.25/20D	9.75/20D	18	20	33¾	10x3¼x1/16C	18	N	4C3J	48x4	12	S	Y	6	Y	BMV	17¼x4	G	288	O	Own	16000	2¾x3½	Re	2 11/16	56	HM	18	Mar-D	30	90
117-D	1165	28000	3920	9.00/20D	10.50/20D	18	20	36	10x3¼x1/16C	18	N	4C3J	48x4	15	S	Y	6	Y	BMV	17¼x5	G	350	O	Own	18000	2¾x4½	Re	3 5/16	56	HM	18	Mar-D	30	90
127-A	625	16000	2390	6.00/20D	7.50/20D	16	20	31¼	9 7/16x2¾x1/16C	16	N	6C2J	46x3	9	S	Y	5	Y	BMV	16x2½	G	176	O	Own	9000	2x3¼	Re	2 11/16	56	HM	15	Mar-D	24	60
127-B	770	20000	2690	7.00/20D	8.25/20D	16	20	32¾	9 7/16x2¾x1/16C	16	N	6C2J	46x3	11	S	Y	5	Y	BMV	17¼x3	G	216	O	Own	12000	2½x3¼	Re	2 11/16	56	HM	15	Mar-D	24	60
127-C	1062	24000	3585	8.25/20D	9.75/20D	18	20	33¾	10x3¼x1/16C	18	N	7C2J	48x4	12	S	Y	6	Y	BMV	17¼x4	G	288	O	Own	16000	2¾x3½	Re	2 11/16	56	HM	18	Mar-D	30	90
127-D	1210	28000	4145	9.00/20D	10.50/20D	18	20	36	10x3¼x1/16C	18	N	7C2J	48x4	15	S	Y	6	Y	BMV	17¼x5	G	350	O	Own	18000	2¾x4½	Re	3 5/16	56	HM	18	Mar-D	30	90
KINGHAM																																		
H-30	670	18500	2560	32x6D	34x7D	18	30	46	10x1/4x2¾C	6	N	7C	46x3½	12	S	Y	5	Y	OMV	17¼x4	CN	272	Y	Own	10000	4x1½	Tu	2 5/8	55	HM	16	Own	30	60
HD-30	795	22500	2800	32x6D	36x8D	18	30	47	10x1/4x2¾C	6	N	7C	46x3½	15	S	Y	5	Y	OMV	17¼x4	CN	272	Y	Own	12000	4½x3½	Tu	2¾	55	HM	16	Own	30	60
H-40	1045	29300	3200	34x7D	38x9D	20	30	49	10x5/16x2¾C	6	N	7C	46x3½	15	S	Y	5	Y	OMV	17¼x5	CN	340	Y	Own	16000	5x1..	Tu	3	55	HM	16	Own	36	85
MACK																																		
ST-20	890	20000	2450	8.25/20D	9.00/20D	18	24	40	9 5/16x2½x1/16C	5	N	7C	54x3	7	R	Y	4	N	OMV	17¼x4	CN	242	Y	T	.....	4½x1½	Tu	2 7/8	56	SM	1 1/2	ASF-D	30	.....
ST-30	1175	25000	3500	9.00/20D	9.75/22D	18	24	44	9¾x2½x1/16C	5	N	7C	54x3	9	R	Y	6	N	OMV	17½x5	CN	356	Y	T	.....	5x1½	Tu	3	56	SM	15½	ASF-D	30	.....
8-12S	1600	37000	4700	9.75/20D	11.25/24D	18	24	46	11¼x3x1/16C	6	Y	4C3T	52x4	9	R	Y	8	N	OMV	17¼x6	CN	426	Y	Own	.....	4½x1 1/16	Tu	3½	55	SM	15½	ASF-D	30	.....
8-12SDD	1925	35000	5100	9.75/20D	11.25/24D	18	24	34	10¾x3x3/16C	18	Y	4C3T	52x4	9	R	Y	8	N	OMV	17¼x6	CN	426	Y	Own	.....	4½x1 1/16	Tu	3½	58	SM	15½	ASF-D	30	.....
MORELAND																																		
111	810	17000	2500	7.50/20D	8.25/20D	18	.....	40	9x3x1/4C	6	N	7C	48x3	11	R	Y	5	N	LHV	16x3½	CI	210	Y	Tim	11000	4x1½	Tu	2¼	60	HM	18	Aus-D	27	77.50
113	990	20000	2750	9.00/20D	9.00/20D	18	.....	44	9x3x1/4C	6	N	7C	48x3	13	R	Y	5	N	LHV	16x3½	CI	210	Y	Tim	13000	4½x3 5/8	Tu	2 7/8	65	HM	18	Aus-D	27	77.50
116	1055	24000	3400	9.75/20D	9.75/20D	20	.....	45	9x3x1/4C	6	N	7C	48x3½	12	R	Y	5	N	LHV	17¼x4	CI	252	Y	Tim	15600	5x1½	Tu	3¼	65	HM	18	Aus-D	33	90.00
RELIANCE																																		
26-S	852	15000	1800	32x6D	32x6D	18	24	38	9x3x1/16C	6	Y	6C	36x3	8	S	N	N	Y	LHV	16x3½	CI	210	O	Tim	10000	4x1½	Tu	2 5/8	60	HM	15	Own	30	75
210-S	947	18000	2000	32x6D	34x7D	20	26	39	9x3x1/16C	6	Y	7C	36x3	10	S	N	N	Y	LHV	16x3½	CI	210	O	Tim	12000	4½x3 5/8	Tu	2¾	60	HM	15	Own	30	75
215-S	1352	21000	2800	9.00 20D	10.50/20D	20	26	41	10 5/16x3x1/16C	6	Y	7C	36x3	12	S	N	N	Y	TMV	17¼x4	CI	264	O	Tim	14000	4½x3½	Tu	2 7/8	60	HM	15	Own	30	75
Junior	1200	24000	3000	32x6D	34x7D	20	24	38	9x3x1/4C	6	N	8C	36x3	8	S	N	N	N	LHV	16x3½	CI	420	O	Tim	10000	4x1½	Tu	2 5/8	70	HM	15	Own	30	75
412-S	1390	26000	3300	32x6D	34x7D	22	26	38	9x3x1/16C	6	Y	9C	36x3	8	S	N	N	Y	LHV	16x3½	CI	420	O	Tim	10000	4x1½	Tu	2 5/8	70	HM	15	Own	30	75
418-S	1732	32000	5000	9.00/20D	9.75/20D	24	28	40	9x3x1/16C	6	Y	10C	36x3	10	S	N	N	Y	TMV	17¼x4	CI	528	O	Tim	12000	4½x3 5/8	Tu	2¾	70	HM	15	Own	30	100
424-S	2360	40000	6400	9.75/20D	9.75/22D	24	33	43	10 5/16x3x1/16C	6	Y	11C	36x3	12	S	N	N	Y	TMV	17¼x5½	CI	704	O	Tim	14000	4½x3½	Tu	2 7/8	70	HM	15	Own	30	100
REO																																		
181	498	15200	2325	6.00 20D	8.25/20D	18	.....	36½	7¼x3x1/4C	5	N	6C	54x3	12	B	Y	8	N	LHV	16x2¼	AI	149	O	Own	10000	2¾x4	Re	2½	56	HM	12	Mar-D	24	65
REO MARTIN																																		
16T	500	14000	2025	6.00 20D	7.50 20D	16	24	40¾	9 7/16x3¼x1/16C	5	N	4C3J	46x3	9	B	Y	5	Y	LHV	16x2½	G	130	O	Own	9000	2x3¼	Re	2 11/16	56	HM	15	Mar-D	24	65
22T	650	17800	2425	7.00 20D	8.25 20D	16	24	43	9 7/16x3¼x1/16C	5	N	4C3J	46x3	11	B	Y	5	Y	LHV	16x3½	G	202	O	Own	12000	2½x3¼	Re	2 11/16	56	HM	15	Mar-D	24	65
25T	845	21400	3300	8.25 20D	9.75/20D	18	24	46½	10x3¼x1/16C	5	N	4C3J	48x4	12	B	Y	6	Y	LHV	17¼x4	G	238	O	Own	16000	2¾x3½	Re	2 11/16	56	HM	18	Mar-D	30	112
35T	1115	25000	3850	9.00 20D	10.50/20D	18	24	48½	12x3 1/16x1/16C	5	N	4C3J	48x4	15	B	Y	6	Y	LHV	17¼x5	G	338	O	Own	18000	2¾x4½	Re	3 5/16	56	HM	18	Mar-D	30	112
SPENCER																																		
J-205	690	17000	2350	32x6-10D	34x7D	16	24	37	9½x3x1/4C	5	N	6C	52x3	10	S	N	N	Y	BMV	17¼x3	AI	223	Y	Own	10000	2½x5	IB	2 5/8	54	HM	18	Own	30	75
J-206	815	20000	2620	34x7D	9.00/20D	16	24	39	9½x3x1/4C	5	N	6C	52x3	12	S	N	N	Y	BMV	17¼x4	AI	297	Y	Own	12000	2¾x5½	IB	2¾	54	HM	18	Own	30	75
J-208	1130	25000	3390	9.75/20D	9.75/24D	18	24	41	9¾x3x1/16C	5	N	6C	52x4	15	S	N	N	Y	BMV	17¼x5	AI	372	Y	Own	16000	3x6	IB	3	54	HM	18	Own	30	75
J-209	1260	28000	3690	10.50/20D	10.50/24D	18	24	43	9¾x3x1/16C	5	N	6C	52x4	16	S	N	N	Y	BMV	17¼x5	AI	372	Y	Own	18000	3x6½	IB	3 1/16	54	HM	18	Own	30	75
T-205	690	17000	2560	32x6-10D	34x7D	16	24	27	9½x3x1/4C	10	S	N	N	Y	BMV	17¼x3	AI	223	Y	Own	10000	2½x5	1B	2 5/8	54	HM	20	Own	30	75				
T-206	815	20000	2830	34x7D	9.00x20D	16	24	29	9½x3x1/4C	10	S	N	N	Y	BMV	17¼x4	AI	297	Y	Own	12000	2¾x5½	1B	2¾	54	HM	20	Own	30	75				
T-208	1130	25000	3600	9.75/20D	9.75/24D	18	24	30	9¾x3x1/16C	16	N	5C	52x4	15	S	N	N	Y	BMV	17¼x5	AI	372	Y	Own	16000	3x6	1B	3	54	HM	18	Own	30	75
T-209	1260	28000	3900	10.50/20D	10.50/24D	18	24	31½	9¾x3x1/16C	16	N	5C	52x4	16	S	N	N	Y	BMV	17¼x5	AI	372	Y	Own	18000	3x6½	1B	3 1/16	54	HM	18	Own	30	75
R-205	730	17000	2650	32x6-10D	34x7D	16	24	27	9½x3x1/4C	16	N	6C	52x3	10	S	N	N	Y	BMV	17¼x3	AI	223	Y	Own	10000	2½x5	1B	2 5/8	54	HM	18	Own	30	75
R-206	855	21000	2920	34x7D	9.00/20D	16	24	29	9½x3x1/4C	16	N	6C	52x3	12	S	N	N	Y	BMV	17¼x4	AI	297	Y	Own	12000	2¾x5½	1B	2¾	54	HM	18	Own	30	75
R-208	1170	25000	3690	9.75/20D	9.75/24D	18	24	30	9¾x3x1/4C	16	N	7C	52x4	15	S	N	N	Y	BMV	17¼x5	AI	372	Y	Own	16000	3x6	1B	3	54	HM	18	Own	30	75
R-209	1300	28000	3990	10.50/20D	10.50/24D	18	24	31½	9¾x3x1/16C	16	N	7C	52x4	16	S	N	N	Y	BMV	17½x5	AI	372	Y	Own	18000	3x6½	1B	3 1/16	54	HM	18	Own	30	75
TRUCK ENGINEERING																																		
2SF	635	16000	2200	7.00 20D	8.25 20D	16	22	38	8x2½x1/4C	5	N	7C	45x2½	12	B	Y	6	O	TMV	16x3½	CI	236	O	Tim	10000	4x1½	Tu	2 5/8	57	HM	15	Own-D	28	75
3SF	825	20000	2800	7.50 20D	9.00 20D	16	24	40	10x2½x1/4C	5	N	7C	46x3	12	B	Y	5	O	TMV	17¼x4	CI	284	O	Tim	12000	4½x3 5/8	Tu	2¾	57	HM	15	Own-D	28	75
4SF	1080	25000	3500	9.00 20D	9.75/20D	18	26	42	10x2½x1/4C	5	N	7C	50x3	14	B	Y	6	O	TMV	17¼x4	CI	284	O	Tim	16000	5x1½	Tu	3	58	HM	15	Own-D	33	100
5SF	1295	28000	4000	9.75/20D	11.25/20D	18	28	43	10x2½x3/16C	5	N	7C	50x3	16	B	Y	8	O	TMV	17½x5	CI	355	O	Tim	18000	5½x1½	Tu	3 1/16	58	HM	15	Own-D	33	100
UTILITY																																		
SW2	635	12000	2060	30x5D	32x6D	16	18	35	6x4 I	7	N	5C	40x3	9	Bs	O	O	O	OMV	16x3½	CN	210	O	Own	10000	2½x3	Re	2 5/8	60	HM	30	Own	24	50
SW3	766	16000	2360	32x6D	34x7D	18	20	38	8x4 I	5	N	6C	40x3	10	Bs	O	O	O	OMV	16x3½	CN	210	O	Own	12000	2½x3½	Re	2¾	60	HM	30	Own	24	50
SW4	1015	20000	2800	8.25/20D	8.00/20D	20	22	43	10x4 I	5	N	7C	40x3	11	Bs	O	O	O	OMV	17x4	CN	264	O	Own	14000	2½x3½	Re	2¾	60	HM	30	Own	30	50
SW5	1154	24000	3200	9.00/20D	9.75/22D	20	20	43	10x4 I	5	N	7C	40x3	12	Bs	O	O	O	OMV	17x4	CN	264	O	Own	16000	2½x3¾	Re	2¾	60	HM	30	Own	24	100

SEMI-TRAILER Specification Table—(Continued)

SEMI-TRAILER MAKE AND MODEL	CHASSIS: Price (f. o. b. factory—see Note)	CHASSIS: Maximum Body and Payload Rating (based on Axle Rating)	CHASSIS: Chassis Weight (includes weight of items included in Price)	TIRE SIZE: Standard	TIRE SIZE: Maximum Size Recommended	FRAME: Length: Standard (ft.)	FRAME: Length: Longest Standard (at Extra Cost)	FRAME: Height (in.)	FRAME: Side-Rail Size and Type	FRAME: Drop (in.)	FRAME: Heat-Treated?	FRAME: No. and Type of Cross-Members	SPRINGS: Size	SPRINGS: Number Leaves	SPRINGS: Shackle Type	SPRINGS: Helper Springs	SPRINGS: Number of Helper Leaves	Radius Rods	BRAKES: Make, Type and Actuation	BRAKES: Drum Diameter and Width	BRAKES: Drum Material	BRAKES: Brake Lining Area	BRAKES: Automatic Emergency	AXLE: Make	AXLE: Maximum Rating (lb.)	AXLE: Beam Section Dimension	AXLE: Beam Type	AXLE: Spindle Diameter (at Inner Bearing)	% Body & Payload on Axle	Landing Gear Type and Actuation	Distance: Kingpin to Front of Frame	FIFTH WHEEL (to match standard upper half): Make and Type	FIFTH WHEEL: Width	FIFTH WHEEL: Price (lower half)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
FOUR-WHEEL	**SE**	**MIS**																																
EDWARDS																																		
AA-31	1360	36200	3800	7.50/20D	9.00/20D	22	Opt	Opt	9¾x2½x⅜C	5	N	10C	42x3	11*	B	N	....	Y	BMV	16x2½	CS	348	O	Tim	20000	4x½	Tu	2⅝	66	M	Opt	Own	30	75
AA-33	1500	36200	4050	7.50/20D	9.00/20D	22	Opt	Opt	9¾x2½x⅜C	5	N	10C	42x3	11*	B	N	....	Y	BMV	17¼x3	CS	436	O	Tim	20000	4x½	Tu	2½	66	M	Opt	Own	30	75
AA-41	1710	45900	4300	8.25/20D	9.75/20D	22	Opt	Opt	9¾x2½x⅜C	5	N	10C	42x3	13*	B	N	....	Y	BMV	17¼x3	CS	436	O	Tim	26000	4½x⅝	Tu	2⅞	66	M	Opt	Own	30	75
AA-51	1950	55500	4760	9.00/20D	10.50/22D	22	Opt	Opt	9¾x2½x⅜C	5	N	10C	42x3	15*	B	N	....	Y	BMV	17¼x4	CS	580	O	Tim	30000	5x½	Tu	2½	66	M	Opt	Own	30	75
GENERAL MOTORS																																		
TT-218W (10,000-lb. axles)	1325	24400	3915	32x6D	34x7D	20	24	38⅝	8¾x3x¼C	6	N	7C	40x3*	9	B	Y	6	Y	BMV	17½x3	NI	418	O	Tim	20000	4x½	Tu	2⅝	66⅔	HM	18	Own-D	33	90
TT-218W (12,000-lb. axles)	1575	29700	4485	34x7D	36x8D	20	24	40¼	8¾x3x¼C	6	N	7C	40x3*	10	B	Y	6	Y	BMV	17¼x4	NI	557	O	Tim	24000	4½x⅝	Tu	2¾	66⅔	HM	18	Own-D	33	90
KINGHAM																																		
H30T	1120	24000	3200	32x6D	34x7D	18	30	50	10x2¾x¼C	6	N	7C	44x3½*	11	B	N	N	N	OMV	17¼x4	CN	544	Y	Own	20000	4x	Tu	2⅝	66⅔	HM	16	Own	30	60
HD30T	1370	30000	3600	32x6D	36x8D	20	30	51	10x2¾x⅜C	6	N	7C	46x3½*	13	B	N	N	N	OMV	17¼x4	CN	544	Y	Own	24000	4½x	Tu	2¾	66⅔	HM	16	Own	30	60
H40T	2080	38000	4000	36x8D	38x9D	22	30	53	10x3½x2¾C	6	N	8C	48x3½*	15	B	N	N	N	OMV	17¼x5	CN	680	Y	Own	32000	5x	Tu	3	66⅔	HM	16	Own	38	85
MORELAND																																		
211	1375	30000	4520	7.50/20D	8.25/20D	20	.....	40	9x3x⅜C	6	N	7C	44x3*	16	R	N	N	Y	LHV	16x3½	CI	420	Y	Tim	22000	4x½	Tu	2¼	65	HM	24	Aus-D	33	90
213	1585	36000	4750	8.25/20D	9.00/20D	22	.....	44	9x3x⅜C	6	N	7C	44x3*	18	R	N	N	Y	LHV	16x3½	CI	420	Y	Tim	26000	4½x⅝	Tu	2⅞	65	HM	24	Aus-D	33	90
216	2050	44000	6200	8.25/20D	9.75/20D	24	.....	45	9x3x⅜C	6	N	8C	45x3½*	15	R	N	N	Y	TMV	17¼x4	CI	504	Y	Tim	31200	5x½	Tu	3¼	65	HM	36	Aus-D	33	90
UTILITY																																		
SWX6	950	20000	3300	30x5D	32x6D	18	20	35	6x4 I	7	N	5C	30x3*	7	Bs	O	O	O	OMV	16x3½	CN	420	O	Own	20000	2½x3	Re	2⅝	67	HM	30	Own	24	50
SWX8	1252	24000	3800	32x6D	34x7D	20	22	38	8x4 I	5	N	6C	30x3*	8	Bs	O	O	O	OMV	16x3½	CN	420	O	Own	25000	2½x3½	Re	2¾	67	HM	30	Own	30	50
SWX9	1670	30000	5000	8.25/20D	9.00/20D	22	24	43	10x4 I	5	N	7C	30x3*	9	Bs	O	O	O	OMV	17x4	CN	528	O	Own	26000	2½x3½	Re	2¾	67	HM	30	Own	30	50
SWX10	1943	40000	5500	9.00/20D	9.75/22D	24	33	43	10x4 I	5	N	7C	33x3*	10	Bs	O	O	O	OMV	17x4	CN	528	O	Own	32000	2½x3¾	Re	2⅞	67	HM	30	Own	30	100

*—Four springs †—Data being compiled

ABBREVIATIONS:
N—No O—Optional Y—Yes

COLUMN 10
C—Channel I—I-Beam

COLUMN 13
B—Box Girder C—Channel
J—Jaw T—Tubular

COLUMN 16
B—Bushed R—Rubber block
S—Sliding

COLUMN 17
G—Gravity

COLUMN 18
C—Coil

COLUMN 20
Makes:
B—Bendix L—Lockheed
O—Own T—Timken
Types:
H—Hydraulic M—Mechanical

Actuation: V—Vacuum

COLUMN 22
Al—Alloy iron CI—Cast iron
CS—Cast steel
CN—Chrome-Nickel-iron
G—Gunite NI—Nickel iron

COLUMN 25
Cla—Clark Own—Own
Tim—Timken

COLUMN 28
IB—I-Beam Re—Rectangular
Tu—Tubular

COLUMN 31
H—Manual S—Semi-automatic
M—Mechanical

COLUMN 33
ASF—American Steel Foundry
Aus—Austin Day—Dayton
Mar—Martin D—Detachable
Own—Own P—Permanent

COLUMN 35
SE—Standard Equipment, no extra charge

Notes:

Column 2 gives the price of the chassis, f.o.b. factory. The price includes the following: standard length chassis; standard tires; power brakes; landing gear; tail and stop light; upper half of fifth wheel, and brake and electrical connections and fittings that are considered part of the trailer's equipment.

Column 3. The maximum body and payload rating of the semi-trailer is based on the axle rating in Column 26.

Column 4. Weight of complete chassis includes weight of items included in price in Column 2.

Column 8 gives the longest frame length available as a standard option at extra cost. Special lengths longer than the longest standard length are available also at extra cost.

Column 9. Frame height is the distance from the ground to top of frame over the rear axle with standard size tires, loaded.

Column 35. The price of the fifth wheel, lower half, is f.o.b. factory. It does not include mounting.

COMMERCIAL CAR JOURNAL
JULY, 1937

Autocar Adds Long Model

As originally announced, the new cab forward Autocar trucks, Models UA and UB, were made available with three wheelbases 84 in., 106 in. and 124 in. A demand has developed for a wheelbase to carry longer bodies than could be applied to the 124 in. chassis. Therefore, the Autocar factory sales department has announced that a wheelbase of 142 in., suitable for a 16 ft. body, will be made available as an extra immediately. The factory has also announced the availability for those two models of a six-man cab such as is generally used in line construction work by telephone companies.

FWD Votes Stock

Unanimous support of a resolution to increase the capitalization of the Four Wheel Drive Auto Co. from two million dollars to three million dollars was voted by stockholders at a special meeting. Shareholders also authorized the board of directors to change the par value of Four Wheel Drive stock from $100 to $10.

President Walter A. Olen said orders on record amount to more than a million dollars and that sales for the first 10 months of the present fiscal year were $1,000,000 more than the sales for a similar period in 1935-1936, or an increase of 40.2 per cent.

COMMERCIAL CAR JOURNAL THIRD-AXLE SPECIFICATIONS

THIRD AXLE MAKE AND MODEL and Truck Model adapted to	Capacity (Lb.) See Explanatory Notes	Price (f. o. b. factory)	Weight (Lb.) with Max. Tires, Frame Extension, Etc.	Maximum Tire Size	LOAD DISTRIBUTION RANGE (First figure of combination applies to center axle; second figure to third axle)		Axle Spacing (with maximum tires)	AXLE DATA			BRAKES (Standard)				Number of Points of Frame Support	Spring Size or Number Leaves Added	Spindle Diameter (at inner bearing)
								Make	Type	Size	Make and Type	Drum Material	Brake Diameter and Width	Lining Area			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Trailing Axles																	
ACME																	
50 (Ford 1½)	10000	352	1460	32x6-10	50-50	.....	42	Own	T	3¼	BM	CA	16x2½	181	2	4 or 6	2⅝
60-H (Chevrolet 1½)	10000	385	1560	34x7-10	50-50	.....	42	Own	T	3¼	CH	PS	16x3	217	2	7 or 9	2⅝
GUILDER																	
C (All Makes)	8000	499	1420	32x6-10	50-50	65-35*	46	Tim	T	3¼	LHV†	CA	16x2¼	135	6	40x2½	2½
E (All Makes)	8000	544	1710	7.50/20	50-50	65-35*	46	Tim	T	3¾	LHV†	CA	16x2¼	135	6	40x2½	2½
H (All Makes)	9000	695	2369	8.25/20	50-50	65-35*	48	Tim	T	4	LHV†	CA	16x2¼	135	6	40x2½	2½
J (All Makes)	11000	803	2464	9.00/20	50-50	65-35*	48	Tim	T	4½	LHV†	CA	16x3½	206	6	42x3	2¾
K (All Makes)	13000	922	2660	9.75/20	50-50	65-35*	48	Tim	T	4½	LHV†	CA	17¼x4	296	6	42x3	2¾
L (All Makes)	16000	1177	3075	10.50/20	55-45	65-35*	52	Tim	T	5	LHV†	CA	17¼x4	296	6	44x3½	3
M (All Makes)	16000	1294	3200	11.25/20	55-45	65-35*	52	Tim	T	5	LHV†	CA	17¼x5	370	6	44x3½	3
HI-LO																	
F-37 (Ford 1½)	11000	359	1650	32x6-10	60-40	.....	43¾	Lig	Re	†	BMV	CA	16x2½	167	1	4 to 6	2½
C-37 (Chevrolet 1½)	11000	440	1800	32x6-10	60-40	.....	44¼	Lig	Re	†	LHV	CA	16x2½	150	1	10 to 11	2½
LE MOON																	
TU (Ford 1½)	10000	350	900	32x6-10	50-50	.....	40	Tim	T	3¼	BM	CA	16x2½	158	1	1 plate	2⅝
LITTLE GIANT																	
6-ton (For any 1½ ton truck)	12000	308	1200	32x6	50-50	50-50	42	Own	Sr	2⅜	LHV†	CA	16x2½	167	6	22x2½	2
8-ton (For any 1½ ton truck)	16000	451	1575	32x6	50-50	.....	42	Shu	Sq	2½	LHV†	CA	16x2½	167	4	42x2½	3
8-ton (For any 2 ton truck)	16000	575	2000	8.25/20	50-50	.....	42	Shu	Sq	2½	LHV†	CA	16x3	180	4	42x3	3
10-ton (For any 2½ to 5 ton truck)	20000	695	2410	9.75/20	50-50	.....	44	Shu	Sq	4	LHV†	CA	17x4	250	4	44x3½	3
PERFECTION																	
HDF (Ford)	10000	380	1804	32x6-10	50-50	.....	42	Own	Sr	2¾	BM	CI	16x2½	167	2	42x3	2
HDC (Chevrolet)	10000	440	1824	32x6-10	50-50	.....	42	Own	Sr	2¾	BMV	CI	16x2½	187	2	42x3	2
THORNTON TANDEN																	
H-30 (For 2 to 4 ton standard trucks)	13000	***	6400	9.00-20	50	50	42½	Tim	Sq	3¾	LH†	CA	16x3½	205	3	42x2¼	2⅝
TIMKEN																	
SBT-800-H (Federal 15, 18, 20; GMC T-16, T-18; Brockway 78, 87, 90X, 98; Indiana 86; Diamond T 212-A; Dodge LF-35; Studebaker Ace)	8000	.....	1910	7.50/20	55-45	.....	44	Tim	T	3¼	LHV	CA	16x3½	132	1	48x2½	2⅝
ST-730-BY (Ford 1½)	8000	.....	1674	32x6-10	55-45	.....	44	Tim	T	3¾	BMV†	CA	15x2¼	158	1	48x2½	2⅝
ST-741-H (Chevrolet 1½)	8000	.....	1681	32x6-10	55-45	.....	44	Tim	T	3¾	LHV	CA	16x2⅞	132	1	48x2½	2½
TRUCKTOR (x)																	
HLF (Ford 1½)	8800	432	1750	32x6-10	50-50	60-40	40	Own	Sr	3	BMV	CA	16x2½	179	6	38½x2½	2½
HLC (Chevrolet 1½)	8800	432	1750	32x6-10	50-50	60-40	41	Own	Sr	3	CHV	CA	16x3	219	6	38½x2½	2½
HLD (Dodge 1½)	8800	432	1750	32x6-10	50-50	60-40	41	Own	Sr	3	LHV	CA	16x2¼	132	6	38½x2½	2½
HLL (Light trucks tires to 34x7 inclusive)	11000	557	1895	34x7	50-50	60-40	45	Own	Sr	3	LHV†	CA	16x2¼	132	6	38½x2½	2½
HLR (Medium truck tires to 9.75/20 inclusive)	16000	999	2600	9.75-20	50-50	60-40	48	Own	Sr	3½	LHV†	CA	16x3½	205	6	40x3	2¾
HR (Heavy trucks tires above sizes listed)	21000	1218	3200	10.50/24	50-50	60-40	52	Own	Sr	4	LHV†	CA	17¼x4	251	6	41½x3	3⅛
TRUXMORE																	
17 (Ford)	8800	435	1691	32x6-10	55-45	65-35*	42	Own	Sq	2½	BMV†	CA	16x2¼	179	4	**	2¼
17 (Chevrolet)	8800	435	1691	32x6-10	55-45	65-35*	42	Own	Sq	2½	LHV†	CA	16x2½	150	4	**	2¼
20 (All makes)	8800	485	1784	32x6-10	55-45	65-35*	42	Own	Sq	2½	LHV†	CA	16x2½	150	4	**	2¼
25 (All makes)	11200	740	2206	34x7	52-48	65-35*	46	Own	Sq	2¾	LHV†	CA	16x3½	206	4	**	2¾
30 (All makes)	13000	990	2509	9.00/20	50-50	65-35*	46	Own	Sq	3	LHV†	CA	17¼x4	251	4	**	2¾
40 (All makes)	20800	1110	3336	10.50/24	50-50	65-35*	51	Own	Sq	3½	LHV†	CA	17¼x4	251	4	**	3¼
UTILITY																	
15 (For any 1½ ton truck)	7500	303	900	7.00/20	55-45	66-33	40	Own	Sq	2½	BM†	CA	15x2¼	152	4	None	2¼
25 (For any 2 ton truck)	9000	389	1100	7.50/20	55-45	66-33	41	Own	Sq	2½	OMV†	CA	16x3½	210	4	None	2¼
30 (For any 3½ ton truck)	13000	594	1600	9.00/20	55-45	66-33	44	Own	Sq	3	OMV†	CA	17x4	264	4	None	2¾
35 (For any 5 ton truck)	18000	700	1900	10.50/24	55-45	66-33	50	Own	Sq	3½	OMV†	CA	17x4	264	4	None	2⅞
Driving Axles																	
GRICO																	
(Ford 1½)	10000	738	6200‡	34x7-10	50-50	.....	42⅞	Ford	T	3¹¹⁄₁₆	FM	CA	14x2½	175	3	42⅞x2¼	2⅝
(Chevrolet 1½)	10000	702	6100‡	34x7-10	50-50	.....	42⅞	Chev	T	3⅝	CH	CA	16x3	214	4	42⅞x2¼	2⅝
THORNTON TANDEM																	
AF (Ford 1½)	10000	735	6400‡	34x7-10	50-50	.....	42	Ford	T	3¹¹⁄₁₆	BM	CA	14x2½	174	3	42x2¼	2⅝
AC (Chevrolet 1½)	10000	735	6350‡	34x7-10	50-50	.....	42	Chev	T	3½	LH	CA	16x3	215	3	42x2¼	2⅝

ABBREVIATIONS:

General

***—Prices under revision

*—Load distribution may be shifted readily even when truck is loaded, on the road.

**—Truxmore—Heavy steel beams (cushioned by patented spring arrangement) used in place of leaf springs.

‡—Weights include both driving axles.

(x)—Patented 4-wheel chain drive available for all Trucktor units.

†—2¼x3

COLUMN 9

Chev—Chevrolet
Ford—Ford
Lig—Liggett
Own—Own
Shu—Shuler
Tim—Timken

COLUMN 10

Re—Rectangular
Sr—Solid round
Sq—Square
T—Tubular

COLUMN 12

B—Bendix
C—Chevrolet
F—Ford
H—Hydraulic
L—Lockheed
M—Mechanical
O—Own
V—Vacuum power

COLUMN 13

CA—Cast Alloy Iron
CI—Cast iron
PS—Pressed steel

†—OPTIONAL BRAKES

Guilder—Bendix on all; Westinghouse Air and Timken on all except C & E.
Little Giant—Own or Bendix.
Thornton Tandem—Bendix
Timken—16 x 2½ brake optional.
Trucktor—Bendix and Timken with air or vacuum power.
Truxmore—On application.
Utility—Bendix and Lockheed.

Notes on Headings

General—(a) The capacity of the third axle (Column 2) is not to be confused with the total capacity made possible on the converted vehicle.

Column 3. The price of the unit includes the standard brakes specified in brake column and frame extensions that extend forward under the cab. Tires and brake (air or vacuum) power are not included in price.

Column 4. Weight of third axle unit includes all appurtenances and maximum tires.

Column 15 gives brake lining area of attachment unit only.

Sludge Panned by Experts

(CONTINUED FROM PAGE 23)

way. Doubtless the introduction of kerosene or carbon tetrachloride through the carburetor had a beneficial effect on the piston rings as it is a pretty safe guess that if the valves were being stuck sufficiently to resist closing, the piston rings were stuck in one position which did not permit them to follow the cylinder wall.

Another shop method of relieving a sludge condition is to give the engine an internal bath with flushing oil which is usually a thin cheap red oil. It is done at a drain period and the engine is idled with a crankcase full of flushing oil for a few minutes then drained and the regular lubricant is put into the oil pan. Doubtless this is still a good method but the sludge solvents should do a better job because instead of taking a material that just happened to be at hand to clean out the engine the solvent manufacturers have made a study of the material which must be dissolved or removed and then compounded a substance to do the job. Some of these compounds are used as flushing material and others are for adding to the regular lubricant.

Oil filters can be used to good advantage in gathering and localizing the water, foreign matter and colloidal free carbon in the lubricant before it has had a chance to combine and caue trouble, provided the filtering element is changed frequently enough. The job of preventing these things from getting into the oil seems hopeless and the next best thing to do is to remove them as quickly as possible once they are there by means of a filter. Aiding the filter is the crankcase ventilating apparatus which permits much of the water to escape as steam.

One fleet operator who had an engine in a peculiar installation found that it was sludging very badly. Other engines on similar work were not causing much trouble in this respect, which resulted in the one engine being the subject of an investigation. It was found that the engine had been tilted from the vertical for accessibility to accessories and the engine had been tilted enough so that the oil in the reservoir blocked off the intake part of the crankcase ventilation system.

Several fleet operators who had been troubled with short-lived piston rings and valves found that oil filters serviced religiously helped lengthen the lives of these parts. Some of them went so far as to say that it had eliminated sludge as a serious problem so far as they were concerned.

Some oils are much more resistant to sludging than others. Just what makes an oil resistant to sludge is a matter of dispute among highly trained refinery technicians so beyond making note of the fact that there is a difference this article will not enter the argument.

WHEN it is all summed up there are a number of things that the fleet operator can do to eliminate sludging in his own fleet when it is costing him money. They are:

1. Use an oil that resists sludging. If the type of oil is changed for this reason make sure that the second oil does not get blamed for sludge created by the first oil. Sometimes the second oil will have a washing effect and sludge will show in the drainings when the second oil is in reality getting rid of sludge created by the first oil.
2. Equip the fleet with oil filters and service them as often as required.
3. Install thermostats radiator covers or change fan pulleys so that the engine operates at an efficient temperature.
4. Make sure that the crankcase breathing apparatus is operating.
5. Make periodic use of sludge solvents or removers.

Washington Letter

By L. W. MOFFETT
Washington Editor

C of C Rejects Long-and-Short Haul Repeal Proposal

BY the narrow squeak of seven votes, member organizations of the Chamber of Commerce of the United States have turned down a committee proposal to repeal the long-and-short-haul clause from the 4th Section of the Interstate Commerce Act. The committee recommendation was approved with 1,069 votes, while it was opposed by 554, but inasmuch as it takes a two-thirds majority to commit the Chamber, the recommendation was defeated.

The move to repeal the clause has been vigorously pushed in Congress by Representative Pettengill, of Indiana, and member of the House Committee on Interstate and Foreign Commerce and under his guidance the measure passed the House at the present session. Nevertheless, it has been stymied on the Senate side, where it rests in the Committee on Interstate Commerce, whose Chairman Senator Wheeler, of Montana, is hostile to the legislation and it is extremely likely that he will keep it smothered in that committee.

That Wage-Hour Bill

TAKING the same position as that presented by the railroads, the motor trucking industry wants to be exempted from the provisions of the Black-Connery wage-hour bill. Views of the industry were submitted to the joint Senate-House Labor Committee on June 11 by J. Ninian Beall, general counsel of the American Trucking Associations, Inc. On the day previous R. V. Fletcher of the Association of American Railroads asked for exemption for the railroads and its employes and said that they were in agreement with the suggestion. He was challenged, however, when he was asked if some 150,000 railroad employes drawing 30c an hour approved the suggestion.

Telling the Committee that the A. T. A. is primarily concerned about the conflicting jurisdiction over federal regulation of the trucking industry, he pointed out that federal regulation under the motor carrier act covers

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(CONTINUED FROM PAGE 51)

rates, hours, qualifications and ages of employes but that the I. C. C. does not have jurisdiction over hours of railroad labor.

"Surely if this bill does not cover railroad labor, it should not be applied to trucking labor," said Mr. Beall. "The industries are competitive."

He said that if it be deemed desirable to apply the bill to the trucking industry, the I. C. C. should be given an appropriate degree of coordinating control, in order that wages, hours, qualifications, ages and rates may receive consideration by one responsible body.

In asking for exemption for transportation, Mr. Beall proposed that the bill be amended by adding the following words:

"Nothing in this Act and no findings or orders of the Labor Standards Board shall apply to any transportation agency subject to regulation by the Interstate Commerce Commission, unless the Interstate Commerce Commission shall, after full investigation and report, have found that the particular provisions of this Act, or the particular findings or order of the Labor Standards Board will be consistent with the policy and provisions of the Motor Carrier Act, 1935 and the orders and regulations of the Interstate Commerce Commission."

Investigation of M-D Relations Improbable

PROPHECY is hazardous, but if indulged in it would be that Washington will not investigate automobile manufacturers'-dealers' relations. Two resolutions for such investigations are pending in Congress, one introduced by Representative Gardner Withrow of Wisconsin, and the other by Representative Harry Sauthoff, also of Wisconsin. Mr. Withrow's is a joint resolution and asks for an appropriation of $75,000 for the Federal Trade Commission to make an investigation. The Sauthoff resolution, narrower in scope than the Withrow resolution, calls for an appropriation of $10,000 for an investigation by the House Committee on Interstate and Foreign Commerce. The proposed investigations have the endorsement of the National Automobile Dealers' Association.

But the view that neither resolution will be adopted rests on two outstanding points.

First, and frankly, it is not believed that the Federal Government is interested in preserving the retailer against the consumer. Despite the wording of the resolutions, or the merit of the point that factory-dealer relationship be investigated particularly as it "affects the public interest," it is doubted that they would be favorably considered on this basis. On the contrary, rightly or wrongly, the reaction more likely would be that any adjustment of factory-dealer relations would result in higher prices of cars for purchasers. The resolution itself does not warrant the conclusion, yet it is quite conceivable that would be the conclusion drawn.

Secondly, Congress is so overloaded with No. 1 grade legislation that it is doubtful that it will add to its burden by taking on a job that many members of Congress do not think involves a national issue. Certainly it is not believed that the House Committee on Interstate and Foreign Commerce, steeped into work up to its neck, would care to handle the inquiry proposed by Representative Sauthoff, and the House might well respect the Committee's wishes.

McConnell Upped by Westinghouse

Horace I. McConnell has been named District Merchandise Manager of the Westinghouse Electric Supply Co. for the Middle Atlantic District. He will continue supervision of the Automotive Department in that district.

Three hundred miles between 4:30 P. M. and midnight, 300 miles back again—that is the daily schedule for trucks operated by the Film Exchange Transfer Company, Dallas, Texas. A "murder run" if there ever was one! Tires were lasting 3000 miles and less. Then came the new Goodyear YKL built of Rayotwist Cord—and now 80,000 miles per tire is not unusual. The new Goodyear YKL conquers the heat created on "murder runs."

GOODYEAR SCORES AGAIN WITH SENSATIONAL NEW YKL TIRE—

A SUPER-TIRE FOR "MURDER RUNS"!

A REVOLUTIONARY new tire that will pile up tremendous savings for operators of trucks on high speed "murder runs".

A tire that will double, triple—even quadruple the best mileage you've ever known on such runs.

That is the new Goodyear YKL Tire—developed by Goodyear engineers after seven years of intensive research, experimenting, testing to conquer the destructive forces of intense internal heat set up in tires operating at sustained high speeds over long distances.

It is built with a new material—RAYOTWIST—that retains practically all of its cold tensile strength under highest temperatures developed by flexing cords on hot highways.

A specially processed rubber compound, incredibly tough, binds silky Rayotwist together with lasting firmness. And the scientific design of the YKL is such that internal heat generated is quickly dissipated.

The result is this *super-tire*—capable of amazing endurance feats where no tire has been able to survive before.

CAUTION! The new YKL is now ready. But Goodyear engineers recommend it only for the most destructive types of service—for the "murder runs" over long distances at sustained high speeds. In ordinary trucking, its extraordinary capacities cannot be fully utilized—and, frankly, its higher price cannot be justified.

THE GOODYEAR TIRE & RUBBER COMPANY, INC., AKRON, OHIO.

*REGISTERED TRADE MARKS

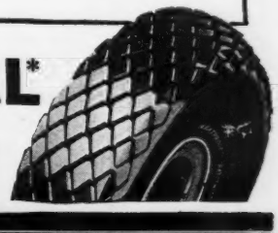
PUT GOODYEARS ON ANY JOB AND WATCH YOUR MILEAGE JUMP!

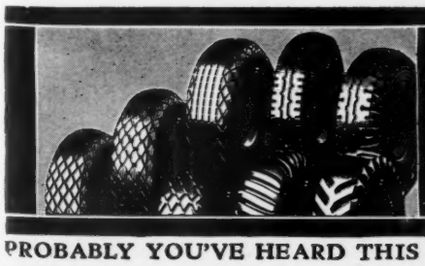
FOR THE "murder runs"—the YKL. But this great tire is but one of many outstanding truck tire values developed by Goodyear's great tire building organization to hold tire costs down by meeting new trucking requirements as they develop.

Tires must fit the job as well as the rim. That's why Goodyear builds more types and sizes than any other manufacturer—each one just as carefully fitted to the job for which it was intended as the YKL is for the "murder runs".

That's why we say, "Put Goodyears, the right Goodyears, on any job and *watch your mileage jump!*

The New **YKL*** **BUILT WITH RAYOTWIST***





GOODYEAR
TRUCK AND BUS TIRES

PROBABLY YOU'VE HEARD THIS ONE . . . . . THERE'S A REAL KICK IN A GOODYEAR BATTERY!

Ability Factor

(CONTINUED FROM PAGE 21)

particularly, as well as on highways in general.

6. I am convinced that slow-moving vehicles on narrow, winding and hilly roads not only represent a very serious hazard but are responsible to a great extent for discrediting the motor truck with the public.

7. It is the writer's candid opinion that slow-moving vehicles are a safety hazard on hills.

8. Slow-moving vehicles represent an accident hazard on hills. A poor performance means an undersize engine; generally speaking, this means that all units and parts are undersize, particularly brakes.

Summary: The engineers are unanimous in the opinion that slow-moving vehicles do present a safety hazard on grades, a few of them also including winding and narrow roads.

II. What ability factor (per cent grade in miles per hour) do you favor for trucks and combinations?

1. A vehicle should be required to have sufficient ability to maintain a speed of 20 m.p.h. on a 4 per cent grade, because (a) 20 m.p.h. represents a speed approximately one-half of generally recognized legal road speed, and (b) a 4 per cent grade is representative of the average grade encountered on highways where traffic density is great enough to cause serious congestion.

2. The 4 per cent grade ability requirement at 20 m.p.h. is an arbitrary figure but it seems to be justified on the basis that this speed is used satisfactorily in many congested traffic areas and that better class highways are now being built with gradients of 4 per cent or thereabouts.

3. Four per cent at 20 m.p.h. is a reasonable speed and grade which any truck of modern design should be able to easily negotiate with its rated payload.

4. In order not to disturb our existing tractor and six-wheel equipment we would favor an ability factor of 2 per cent at 20 m.p.h. For trucks, 4 per cent at 20 m.p.h. would not cause us any great difficulty. Whether such a proposal would be practical is another question.

5. I personally favor the ability factor of 4 per cent grade at 20 m.p.h. Most of the grades on present-day highways are 3 per cent or less with an occasional steeper one. Therefore, vehicles with this ability would travel along at a good rate of speed on a relatively level road or say one with 2 per cent or perhaps 3 per cent grades.

6. I suggest that an ability factor of 3 per cent grade at 20 m.p.h. be used or, as an alternate regulation, that a truck be required to climb at least a 3 per cent grade when loaded to the maximum gross weight allowed by law with the transmission in the next gear below high gear and without the use of an auxiliary transmission. A truck that can climb any grade in the next to the top transmission speed will have enough road speed and the regulation would be more easily enforced. It is the truck that must be put in low gear at every little grade that is a nuisance. There are very few large trucks, particularly of the six-wheel and tractor-trailer types, on the roads today having sufficient power to move the maximum gross weights allowed by some states over a 4 per cent grade at 20 m.p.h. This factor would work a great hardship on operators of this type of equipment.

7. The minimum ability factor for all types of units which normally operate on public highways should be at least 4 per cent at 20 m.p.h. Overloaded, under-sized trucks are very inefficient over a long period of time and the passage of laws demanding that

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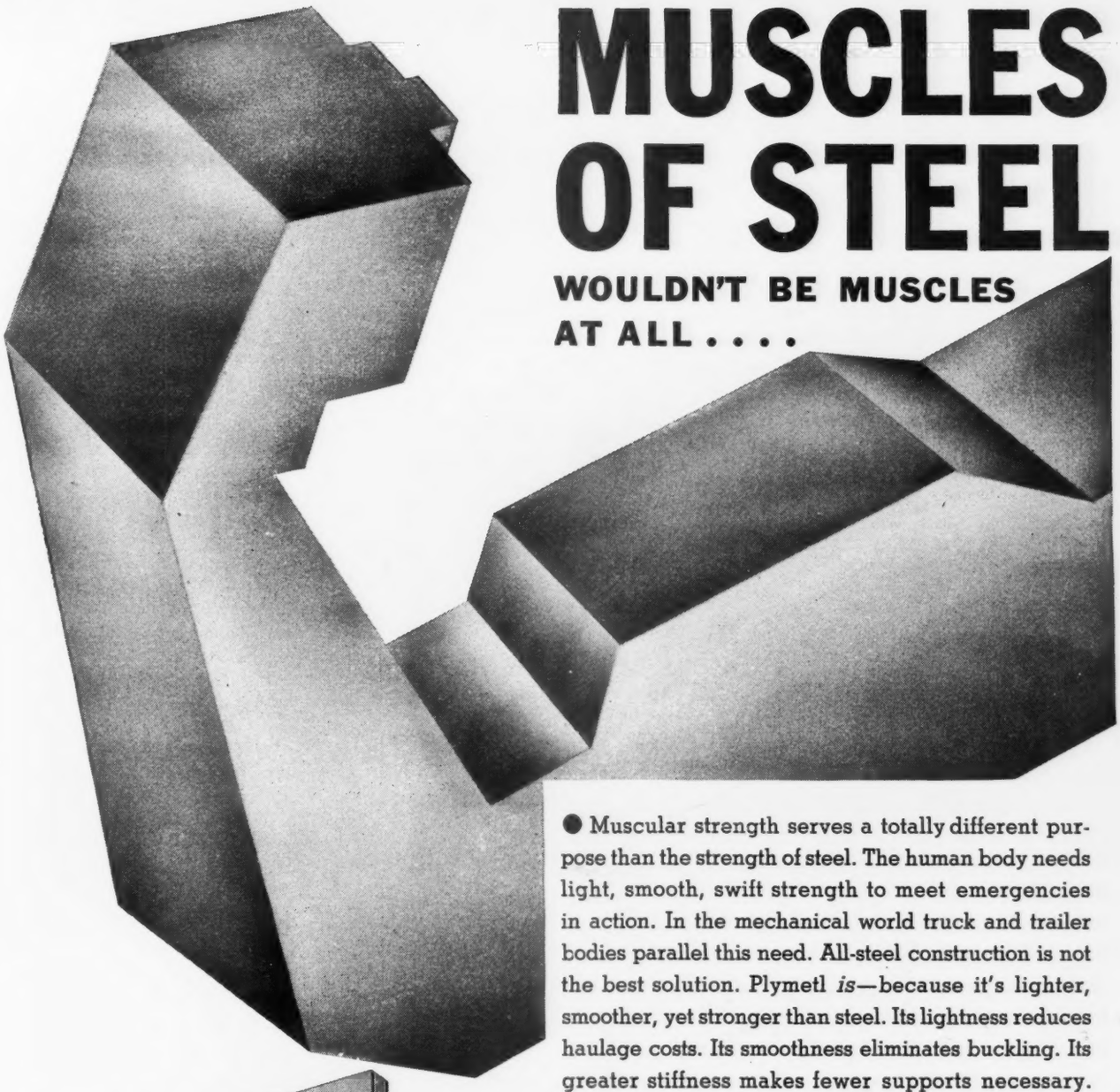
MUSCLES OF STEEL

WOULDN'T BE MUSCLES AT ALL . . . .



● Muscular strength serves a totally different purpose than the strength of steel. The human body needs light, smooth, swift strength to meet emergencies in action. In the mechanical world truck and trailer bodies parallel this need. All-steel construction is not the best solution. Plymetl *is*—because it's lighter, smoother, yet stronger than steel. Its lightness reduces haulage costs. Its smoothness eliminates buckling. Its greater stiffness makes fewer supports necessary. Plymetl is less subject to damage through strenuous wear. The outer super-galvannealed steel is highly rust-resistant. The inner, plywood layer has high insulating value. The two are combined with absolutely waterproof glue. Lastly, Plymetl is available for prompt shipment in larger one-piece panels than any steel mill can manufacture.

Is it any wonder Plymetl is supplanting all other materials for truck and trailer bodies?

Write to us for stock sizes and prices.

"PLYMETL"

HASKELITE MANUFACTURING CORPORATION

208 West Washington St. • Chicago 6432 Cass • Detroit Chrysler Building • New York

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(CONTINUED FROM PAGE 54)

truck equipment have 4 per cent grade ability at 20 m.p.h. will not impose any great hardship on truck operators but will instead be to their own benefit in the long run.

8. Until experience dictates a change is necessary we recommend 3 per cent gradability at 20 m.p.h. for trucks and tractor-trailer combinations.

Summary: Five of the engineers favor a 4 per cent grade at 20 m.p.h. Two favor a 3 per cent grade at 20. One favors 4 per cent at 20 for trucks and would be more lenient—2 per cent at 20—with tractors and six-wheelers because of his present engineering set-up, but questions the practicability of this proposal.

III. If ability factor regulation is adopted should it have a "grandfather clause?" What time extension would you give existing equipment?

1. It is not believed that a grandfather clause is needed. There is no necessity of making mechanical changes to accomplish the desired results. All that is needed is to reduce the load by the necessary amount. Where license fees have been assessed and collected in existing equipment on the basis of payload or gross weight, it would suffice to permit the operator to continue on the basis of his license until the new period arrives.

2. In order to obtain the benefits of ability factor regulation, we would like to see a ruling applied to existing vehicles somewhat as follows: For the first year, no change; for the second year, 2 per cent grade ability; for the third year, 3 per cent; and after that 4 per cent regulation to become effective.

3. Regarding time extension on existing equipment, two years should be fair to the small or large truck operator. On new equipment, however, it should be effective immediately.

4. A grandfather clause would be necessary in order not to cause great hardship to manufacturers and operators with existing equipment. Regulations regarding increasing ability might be required over a perod of several years, or a time of perhaps two years allowed to arrive at the proposed 4 per cent at 20 m.p.h. would be desirable.

5. Believe ability factor regulation should have a grandfather clause and would prefer to see the change made Jan. 1, 1940. Favor a light ability factor immediately, such as 2 per cent at 20, with a more severe factor for all new vehicles purchased and for all vehicles at the expiration of the grandfather clause.

6. A grandfather clause would be necessary, and five years would be ample. Would favor the imposition of a light ability factor immediately with a not too severe factor (3 per cent at 20) for new equipment.

7. Regulation adopted should have a grandfather clause with a maximum time extension for existing equipment of two years from date of enactment.

8. We suggest a two-year time extension for existing equpment.

Summary: Seven engineers favor a grandfather clause. One doesn't consider it necessary. Of the seven favoring a clause, four suggest outright a two-year extension for existing equipment, and a fifth specifies a definite date which would amount to a two-year period if the legislation were enacted this year. One engineer thinks five years would be ample and one sets forth a graduated increase over a three-year period.

IV. What effects do you foresee on truck design if a 4 percent at 20 m.p.h. ability factor is imposed?

1. The enforcement of an ability requirement will probably result in reducing payload for a given engine displacement, particularly on tractor-semi-trailer or truck and trailer combinations. Or it will result in the

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THESE TRUCKS CLIMB MOUNTAINS, CROSS DESERTS, BUT *ALWAYS* KEEP ON SCHEDULE

Lowell Thomas

KC-LA FLYERS REPORT NO SIDEWALL FAILURES WITH GOODRICH SILVERTOWNS

by Lowell Thomas

Radio News Commentator and World Traveler

A KC-LA Flyer stops at a New Mexico Indian Reservation

"I'd heard a lot about cross-country motor freight but I was amazed when I learned the story of the KC-LA Flyers. They have 40 big trucks pounding the highways night and day. Running daily through service between Los Angeles and Kansas City—a distance of 1883 miles. Near Needles, Calif., trucks climb from 90 feet below sea level to an altitude of 6000 feet in 30 miles. They wind their way up 3000 feet in the last 7 miles—one of the most difficult climbs in the country.

"All in all they travel more than three million tire-killing miles annually.

"Yet these trucks run on train schedules. And schedules are always maintained. They tell me they've never had a premature tire failure with Goodrich Triple Protected Silvertowns."

* * *

And Lowell Thomas can tell you more of the grueling, grinding punishment that Goodrich tires take on the runs of the KC-LA Flyer Transport Company. How they fight snow in the mountains, blistering heat in the desert, how they roll up high mileage that means low tire cost.

You can get the same story from truckers everywhere. On the hardest hauls, on the tire-torture runs, Silvertowns are first choice. They stand up where other tires fail because of Triple Protection. This Goodrich invention actually checks 80% of premature failures! It makes tires run cooler. It adds mileage on any kind of haul.

Only Goodrich gives you this 3-way protection:

1 **PLYFLEX**—distributes stresses throughout the tire—prevents ply separation—checks local weakness.

2 **PLY-LOCK**—protects the tire from breaks caused by short plies tearing loose above the bead.

3 **100% FULL-FLOATING CORD**—eliminates cross cords from *all* plies—reduces heat in the tire 12%.

But Goodrich charges no premium for this tire! You get Triple Protected Silvertowns at regular prices. The extra service is your saving. Why not call a Goodrich dealer right now?

Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

(CONTINUED FROM PAGE 56)

preferable alternative of equipping vehicles with larger powerplants and eventually provide a stimulant to obtaining more power from a given displacement.

2. This regulation will undoubtedly result in the use of larger powerplants and a much more careful study of transmission and axle ratios than has ever been given in the past. It will further have the effect of generally increasing truck speeds since, if part of the tonnage is to be taken away from the operator, the only way that he can make this up is by shortening the elapsed time between two given points. It may lead to the rather undesirable situation of two distinct types of trucks, one for cities where the regulation will probably not be effective, and the other for interurban work.

3. As stated in Question II the design should not be affected, except possibly by a demand for quieter transmission reductions.

4. It will greatly increase the power requirements for six-wheel vehicles and combinations. At the present time in states where limitations on gross weights are imposed there is a great deal of pressure to eliminate all possible weight from chassis, particularly tractors. The increase in power requirements will naturally increase engine, transmission and axle sizes and will make the matter of weight and cost reduction a more difficult problem. This may lead into special tractor designs involving the use of light construction and metals.

5. It would mean larger engines, better cooling, stronger transmissions, clutches and rear axles or the increased sale of larger equipment which would mean that we would see 3- to 5-ton tractors on the road pulling heavily loaded trailers instead of 1½- to 2-ton tractors.

6. The engine power must be increased with the consequent increase in chassis weight and loss of payload-carrying capacity. This would mean an increase in first cost and in freight rates.

7. No specific comment.

8. Responsible manufacturers would be obliged to use larger engines and heavier clutches, transmissions, universal joints and rear axle driving parts which would result in increased list prices without any particular advantage insofar as the customers are concerned. But, there would be a tendency with small users and irresponsible manufacturers to increase the size of the engine without proportionately increasing the propulsion elements.

Summary: Six engineers see larger powerplants and propulsion elements as necessary. One in this group of six speculates on the possibility of lighter metals and construction. One sees no changes in design necessary in order to carry rated payloads except quieter transmissions. One makes no comment.

113 M.P.H. for 500 Miles

(CONTINUED FROM PAGE 26)

are perhaps things to be learned about truck operation from successful racing.

After the bench work was done, Shaw stepped into his car and provided evidence that driving is one of the fine arts and that it can be done at high speed amid congestion without accident. He drove his Offenhauser the entire 500 miles without relief, making two pit stops for a total time out of less than three minutes, another demonstration of mechanical skill, and hung up a new record for the Indianapolis track.

NO less thrilling to watch was the performance of Ralph Hepburn, who crossed the line just 2.16 seconds be-

(TURN TO PAGE 60, PLEASE)

OVERDRIVE FOR MOTOR TRUCKS

What good is Overdrive? Is it useful in a dump truck? A truck proceeding up a grade? A truck in city traffic? A logging truck? A coal delivery truck? In *any* truck?

At first glance "No!" But those who use it in heavy duty service emphatically say *"Yes!"* Let's find the reason.

There are several kinds of Overdrive. Overdrives in passenger cars and overdrive gears in truck transmissions reduce engine speed at high road speed. These Overdrives are just *one* gear, with *one* use. They are used for speed. They are not useful for pulling.

But Overdrive in an auxiliary transmission mounted behind a truck transmission is *not* one gear. It is *four* gears! It is a *different* Overdrive! It is used for *pulling*! It has *many* uses!

23% FEWER R.P.M.S

Watson-Brown-Lipe gives an overdrive to *each* transmission gear—to first, second, third and high. It reduces engine speed at high road speed and produces three transmission power gears — *pulling* gears.

What value lies in that? Time saving. Performance. Miles per hour profit. How so? Consider. If on slight grades or traffic a truck cannot use high, it must drop back to third. Third may be too slow, may race the engine. But drop to Overdrive third, which is lower than high and higher than third. Is that a benefit? Here is the answer: in High, its speed is 46 miles per hour; in Overdrive 3rd, 35 miles per hour; in Third, 27 miles per hour.

Overdrive third is 8 miles per hour faster than third. Overdrive second, 5 miles faster than second. Overdrive first, three miles faster than first. And *these* overdrives *pull*. They save time! Time is money!

20% LESS FUEL

These overdrive gears do not lug the engine because they are *lower* than high. If an engine will pull *at all* in high, it will pull in these three gears. Engine power has nothing to do with it!

So those are wrong who say: "Fast enough now. Don't need Overdrive. Engine hasn't enough power for Overdrive. Overdrive lugs engines." This thought comes from associating Overdrive only with speed. But Watson-Brown-Lipe Overdrive produces *three* gears for power plus *one* primarily for speed; the Overdrive high. This gear slows the engine or it speeds the truck.

These figures show the benefit of Overdrive high: All figures typical.

Engine RPM in High	*Truck Speed*	*Engine RPM Overdrive High*
2420 rpm	35 mph	1860 rpm
2760 rpm	40 mph	2120 rpm
3110 rpm	45 mph	2390 rpm

At 45 miles per hour, Overdrive high reduces engine speed from 3110 to 2390 and saves 43,700 revs. per hour. Or, instead of going 35 miles per hour at 2420, go 45 at 2390. Overdrive high saves fuel, saves engine wear, when light loaded or returning empty.

Boiled down, this is the value of Watson-Brown-Lipe Overdrive for motor trucks! It has power for pulling. It is a time saver. It is a performance creator. It is a profit maker. Be guided by an understanding of it and proceed to profit with it.

* * * *

Watson-Brown-Lipe Auxiliary Transmissions combine Overdrive *with* Underdrive — producing 12 speeds forward and 3 reverse — a maximum of *usefulness.*

AUXILIARY *Transmissions* **WATSON-BROWN-LIPE** H.S.WATSON CO., SAN FRANCISCO & TOLEDO

How They Finished in the 500 Mile Race

Finish Position	Driver	Number of Car	Car	M.P.H.	Cause of Withdrawal	Number of Pit Stops	Withdrawn in Lap No.
1	Shaw	6	Gilmore-Shaw	113.580		2	
2	Hepburn	8	Hamilton-Harris	113.560		3	
3	Horn	3	Hartz Spl	112.079		4	
4	L. Meyer	2	Boyle Spl	110.730		4	
5	Bergere	45	Midwest Red Lion	108.935		4	
6	Cummings	16	Boyle Spl	107.123		6	
7	Devore	28	Miller Spl	106.995		5	
8	Gulotta	38	Burd Piston Ring	105.015		5	
9	Connor	17	Marks Miller Spl	103.830		3	
10	Tomei	53	Sobonite Plastic	101.825		5	
..	Gardner	31	Burd Piston Ring	.....	Run. at finish	6	
..	Roberts	62	Thorne Spl	.....	Run. at finish	3	
..	Householder	23	Topping Spl	.....	Run. at finish	4	
..	Cantlon	34	Bowes Sealfast Spl	.....	Run. at finish	6	
..	Rose	1	Burd Piston Ring	.....	Bkn. Oil Line	5	128
..	Snyder	5	Sparks Spl	.....	Trans. failure	1	28
..	C. Miller	7	Boyle Spl	.....	Ign. failure	1	36

Finish Position	Driver	Number of Car	Car	M.P.H.	Cause of Withdrawal	Number of Pit Stops	Withdrawn in Lap No.
..	Winn	10	Miller Spl	.....	Bkn. Oil Line	3	85
..	Snowberger	12	R. & S. Special	.....	Clutch failed	4	87
..	Mays	14	Bowes Seal Fast	.....	Overheating	2	24
..	Stapp	15	Topping Special	.....	Clutch failed	3	38
..	Brisko	24	Elgin Piston Pin	.....	No oil pres	4	108
..	Petillo	25	Petillo Special	.....	Out of oil	2	109
..	Wilman	26	Four-Wheel Drive	.....	Bkn. con. rod	2	95
..	Davis	32	Thorne Special	.....	Crashed	5	190
..	Swanson	33	Fink Auto Special	.....	Carburetor	2	62
..	Litz	35	Motorola Special	.....	Out of oil	5	192
..	Fowler	41	Lucky Teetor Special	.....	Pushed car	7	116
..	Al Miller	42	Thorne Special	.....	Carburetor	7	176
..	Bailey	43	Duray Sims Special	.....	Clutch failed	2	107
..	Wearne	44	Duray Special	.....	Carburetor	5	99
..	McQuinn	47	Sullivan-O'Brien	.....	Broke piston	2	46
..	Ardinger	54	Chi. Rawhide Oil Seal	.....	Bkn. con. rod	3	106

hind Shaw to place second. Overcome by the heat at the 108th lap, Hepburn was forced to relinquish his seat to Bob Swanson until he recovered. Taking command again at the 167th lap he staged a brilliant come-back and rode Shaw's tail, lap after lap, but was unable to squeeze out that extra fraction of speed necessary to put him in first place. His average speed was 113.565 miles per hour. Just 0.015 miles per hour slower than Shaw's.

Of the 33 cars that started the race, only 14 were running at the finish. Overheating, oil loss, clutch failures and burned out bearings took their toll of cars, leaving only those in the race that were mechanically fit to stand up under the terrific high speeds and high temperatures encountered during the 500-mile grind. Crankcase temperatures ran particularly high, in some cases well up to the 300 deg. mark. Oil consumption was particularly heavy as is always the case with high speed driving, a fact to which fleet operators can attest.

In spite of the fact that 25 qt. of oil were allowed for the race, several jobs ran into trouble through a shortage of oil. For the last 15 laps Shaw's oil pressure gage registered zero on the turns, barely picking up enough pressure on the straightways to keep the bearings from burning out. It was a speed-record-breaking race from start to finish, the first four winners exceeding the average speed of 109.069 miles per hour set by Louis Meyer last year. Only one record did not fall and that was the average speed at the end of the 200-mile mark which was 114.526 miles per hour in 1936 and 114.181 miles per hour this year.

At the end of 50 miles Jimmy Snyder led the field with an average speed of 117.947 miles per hour. His job, which made an unofficial practice lap at better than 130 miles per hour and also set the highest qualifying speed of 125.287 miles per hour, was powered by a new

(Turn to Page 62, Please)

QUESTION: *What is a tire worth?*

A TIRE is worth no more than the work it does.

It must be likened to a machine. The purchase price alone means nothing—until you know the cost of the work per unit it turns out.

You can't know the real cost of a tire until you know how far it has gone and how many tons or packages it has carried. You must divide purchase price by mileage and payload.

That's why General Truck Tires have always been built stronger—to deliver greater mileage and haul more payload. It costs more to build a General Tire because of the way it is built. Thousands of truck operators know it costs less to use Generals because of the way they perform.

Your local General Tire dealer is ready to offer you the benefit of his factory-training and practical truck tire knowledge. He may be able to reduce your tire costs materially.

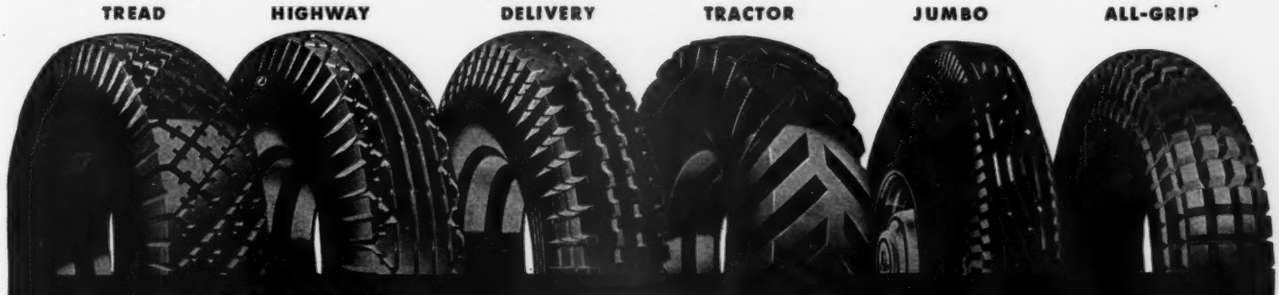
THE GENERAL TIRE & RUBBER COMPANY · AKRON, OHIO
In Canada—The General Tire and Rubber Company of Canada, Ltd., Toronto, Ontario

STRONGER—All plies are *full* plies anchored at the bead—no floating "breaker-strips"—every inch and every ounce is there for just one purpose—to produce more miles and a lower cost for you.

COOLER—They flex uniformly without that heat-producing "hinging action" of ordinary breaker-strip tires. Heat kills the life of cords and cuts down the miles in a tire. Generals are *cool*—that's why they run more miles at a lower cost for you.

"COMPACT RUBBER" TREADS—All tires stretch due to fatigue in the fabric, but Generals, having no idle, half-way plies, stretch least of all. The tread is kept compact and compressed against the road—that's why it produces more miles and reduces your cost.

THE TRACTION TREAD | THE HIGHWAY | THE COMMERCIAL DELIVERY | THE CLEATED TRACTOR | THE JUMBO | THE ALL-GRIP



One of the most complete lines in the business—each tire built to give you more miles for less money

GENERAL TRUCK TIRES

(CONTINUED FROM PAGE 60)

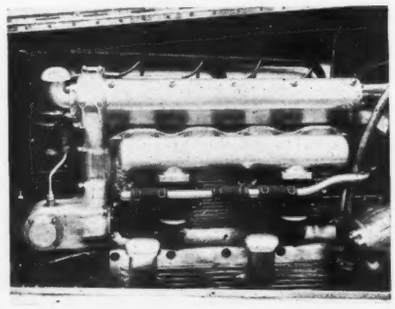
Sparks engine of 337 cu. in. displacement. It is equipped with a single horizontal type Winfield carburetor and a centrifugal type super-charger mounted at the rear of the engine.

With the requirement that cars use only a standard grade of gas instead of special racing fuel, it was necessary to lower the compression ratios considerably. This was accomplished in the main by the use of a piston with a concave head. Compression ratios ranged from 7.25 to 1 up to 8 to 1 in the majority of cases, with one job reported as being about 9 to 1, which is about 1½ times as high as a top truck ratio.

The Maserati driven by Babe Stapp and the Alfa Romeo driven by Rex Mays were the headaches of the fleet. Both are of foreign make and considerable work had to be done on them to meet the new fuel requirements. Compression ratios had to be changed as these jobs were built to run on alcohol. Valve timing had to be changed also and when these jobs were worked over to conform to our regulations they proved to be not as fast as the Miller or Offenhauser engines.

Of particular interest mechanically was the Sparks Special engine in Jimmy Snyder's car, the new Brisko six-cylinder job, the McDowell engine used in the Lucky Teeter Special, the Packard 120 of Snowberger's and the rear engined job built by Lee Oldfield.

The Sparks engine has already been mentioned. The Brisko job is also a six with over-head camshafts and an aluminum block with steel sleeves. The introduction of these six cylinder engines



View of the Offenhauser type engine with which both Shaw and Hepburn finished first and second respectively

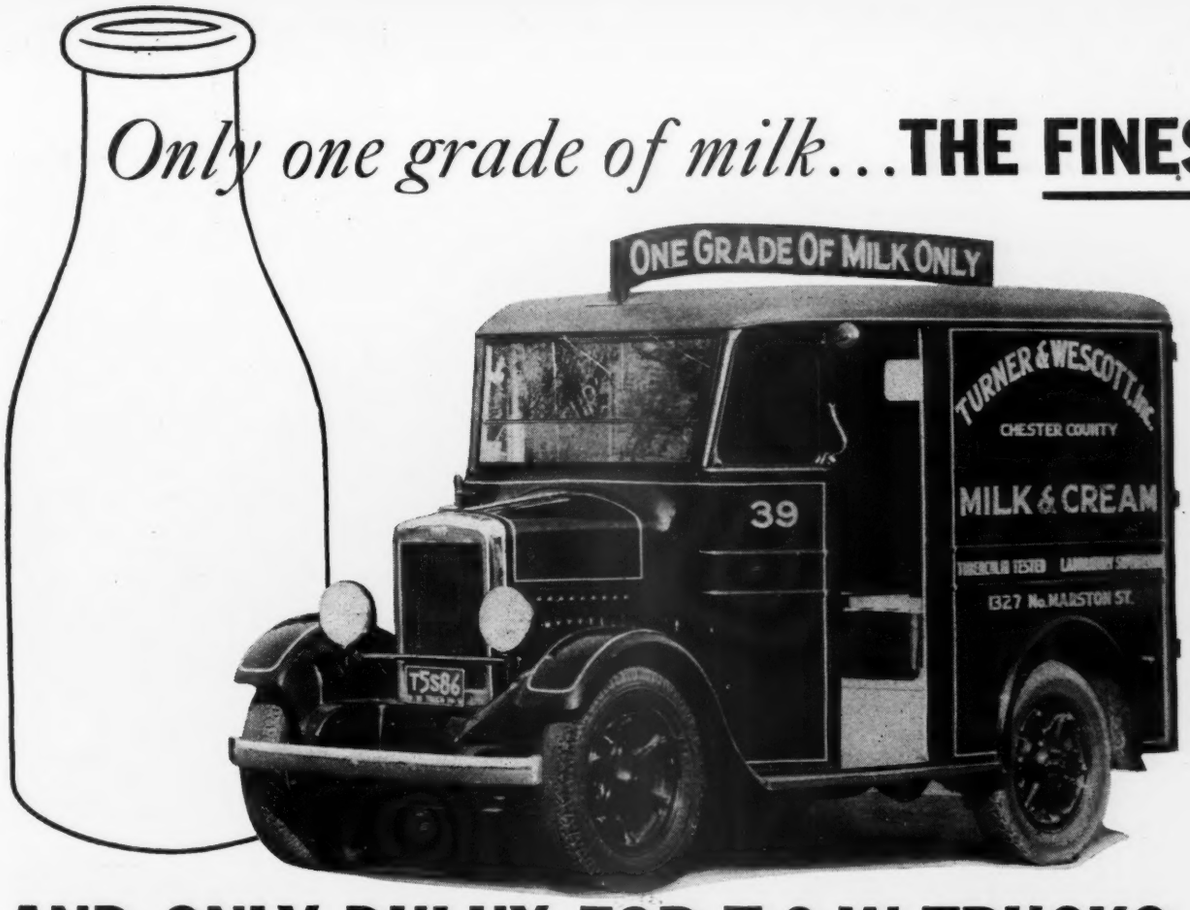
may indicate a trend away from the eight. The Voelker V-12 did not qualify due to lack of time to work out some of the bugs, chief of which was carburetion.

One unusual feature of the Voelker engine is the articulated connecting rods and the practice of using needle bearings in the lower and upper ends of the rod. The Packard application seems to be a standard engine with, of course, a special head and other changes to hop it up to the racing engine class.

The McDowell is very similar to the Miller in appearance and is a splendid example of the fine construction features that go into the making of a racing engine. While the rear engined Oldfield job was not finished in time to qualify, there is little doubt that its design embodies many desirable features. It is powered by a V-16 Marmon engine and should be plenty fast, and is independently sprung on all four wheels, the front suspension being similar to that used on Packard passenger cars. We may expect to see and hear more of this job as it is expected to be entered in the Roosevelt race, July 3.

Champion spark plugs are still the choice of the great majority of drivers. New Departure bearings are used almost exclusively, as are Bosch magnetos and Packard cable. Burd rings are found in the winning Wilbur Shaw job. Brakes are still pretty well divided between mechanical and hydraulic operation. Firestone tires were used 100 per cent and the high speeds combined with the rock asphalt newly laid on the turns of the track caused unusual tire wear. A total of 70 tire changes was made during the race.

Only one grade of milk... THE FINEST



AND ONLY DULUX FOR T & W TRUCKS...

REG. U.S. PAT. OFF.

for FINEST *Appearance and* LOWEST COST

TURNER & WESCOTT, Inc., Philadelphia, are famous for the uniform fine quality of their milk.

And the smart, gleaming T & W trucks that deliver it have the finish that's famous for keeping fine appearance *up* and painting costs *down* . . . Du Pont Automotive DULUX.

Alert fleet owners all over the country have found that this beautiful, durable finish has three primary advantages:

1. DULUX looks better. Trucks finished with DULUX reflect credit upon their owners . . . act as smart, business-building advertisements wherever they're seen.

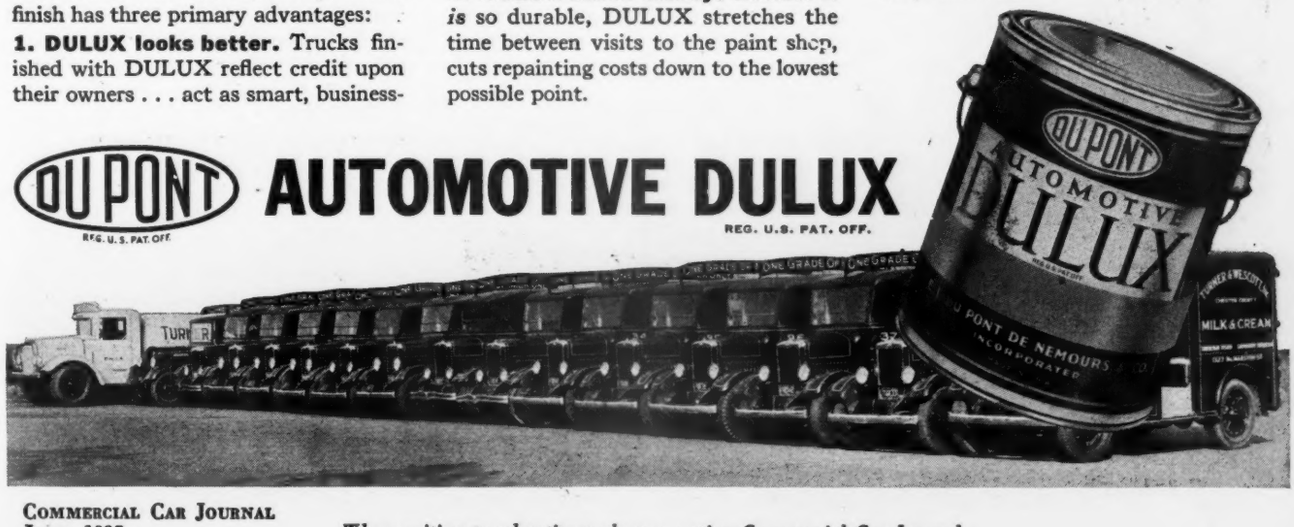
2. DULUX lasts longer. This finish is amazingly durable. It resists the attacks of year-round weather, corrosive traffic gases, grease, oil, accidental bumps and bangs. DULUX keeps its original sparkle and lustre far longer.

3. DULUX saves money. Because it *is* so durable, DULUX stretches the time between visits to the paint shop, cuts repainting costs down to the lowest possible point.

Have *you* investigated the economy of DULUX? If not, your overhead may be higher than necessary. A du Pont representative will be glad to call and give you complete information about this finish that has set completely new standards for beauty and low costs. E. I. du Pont de Nemours & Co., Inc., Finishes Division, Refinish Sales, Wilmington, Delaware.

DU PONT AUTOMOTIVE DULUX

REG. U.S. PAT. OFF.



When writing to advertisers please mention Commercial Car Journal

News SUMMARY

May Sales and Production Show Gains

Truck registrations for May are estimated at 63,000 for an increase of 1.3 per cent over May 1936, when 62,183 units were registered. It is, however, a drop of 7 per cent in registrations of the preceding month of April. Registration for the first five months of this year total 280,599, which is a 6.3 per cent gain over the same period in 1936, when 263,635 units were registered.

Truck production for May of 96,945 units is the highest on record for that month. May shows a gain of 22.2 per cent over the same month in 1936 when only 76,208 units were produced. Production for five months totals 440,873 units, which is a gain of 14.2 per cent over the same period in 1936 when 385,777 units were produced.

W. C. Leingang, who has been appointed manager, automotive manufacturer's sales, for the Electric Storage Battery Co., Philadelphia. He has been with the company since 1923

J. J. Summersby, who has been appointed general sales manager of the Worthington Pump and Machinery Corp. He was assistant vice-president of the company

APPOINTMENTS

GAR WOOD INDUSTRIES, INC., tank division, has appointed the following distributors: Ohio Equipment Co., 47 W. Maple St., Columbus; Oil Station Appliance Co., 1145 E. 22nd St., Indianapolis.

FULLER MFG. CO., Kalamazoo, Mich., has appointed E. L. Ludvigsen vice-president and general manager of the company. He was formerly vice-president in charge of sales.

A. L. Martinek, who has been appointed chief engineer of the Delta Electric Co., Marion, Ind. He resigned from H. A. Douglas Mfg. Co., to assume his new position

TIMKEN DETROIT AXLE CO., announces its new officers and directors for the ensuing year. Directors are: H. H. and W. R. Timken, H. W. Alden, Willard F. and Walter F. Rockwell, R. J. Goldie and Austin Lynch. Officers are: R. L. Busse, L. R. Buckendale, A. I. Hawkins, S. W. Warner and Messrs. Alden, Rockwells and Goldie. C. A. Cooper was appointed to the board of directors. A. H. Chatley and Edward Rhyner were appointed assistant secretary and assistant treasurer respectively of the Wisconsin Axle Division.

MACMILLAN PETROLEUM CORP., Los Angeles, has appointed S. G. Harris its Eastern representative with offices at 50 W. 50th St., New York City.

DIESEL MOTORS, INC., 3740 Cass Ave., Detroit, has appointed G. L. Moyers its president and general manager. He was formerly sales director of Handy Governor Corp. The company formed to distribute and service diesel engines in Michigan.

B. F. GOODRICH CO., Akron, has appointed J. J. Newman vice-president and general manager of the company's tire division.

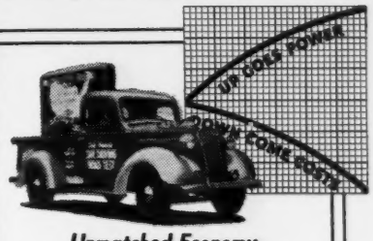
(Turn to Page 66, Please)

1937 CHEVROLET TRUCKS
and Commercial Cars

Fleet Owners buy Chevrolet Trucks because of bigger loads per trip—higher earnings per unit. They profit from Chevrolet's great pulling power and unmatched operating economy. There's a chassis size and a body style exactly suited to the most practical and economical handling of your haulage and delivery requirements.

General Motors Installment Plan—monthly payments to suit your purse.

CHEVROLET MOTOR DIVISION
General Motors Sales Corporation
DETROIT, MICHIGAN



Unmatched Economy Proved in 10,244-Mile
"RIM OF THE NATION" TEST RUN
With Half-Ton "Economy Model" Pickup—1,000-Pound Load

Location of Test	'Round the Nation, Detroit to Detroit
Distance Traveled	10,244.8 Miles
Gasoline Used	493.8 Gallons
Oil Consumed	7.5 Quarts
Water Used	1 Quart
Gasoline Cost	$161.90
Gasoline Mileage	20.74 Miles per Gallon
Average Speed	31.18 Miles per Hour
Running Time	328 Hours, 31 Minutes
Gasoline Cost per Mile	$.0050
Average Oil Mileage	1,365.9 Miles per Qt.
Total Cost of Repair Parts	$8.73

These records have been certified by the A.A.A. Contest Board as being officially correct.

PERFECTED HYDRAULIC BRAKES — NEW HIGH-COMPRESSION VALVE-IN-HEAD ENGINE — MORE LOAD SPACE — IMPROVED LOAD DISTRIBUTION — NEW STEELSTREAM STYLING — IMPROVED FULL-FLOATING REAR AXLE WITH NEW ONE-PIECE HOUSING (on 1½-Ton Models) — NEW ALL-STEEL CAB — PRESSURE STREAM LUBRICATION

"MORE POWER *per gallon* CHEVROLET **LOWER COST** *per load"*

NEWS

(CONTINUED FROM PAGE 64)

WHITE MOTOR CO., Cleveland, has appointed J. E. Dunbar as purchasing agent for the company.

UNITED STATES RUBBER PRODUCTS, INC., has transferred C. W. Gilmer from Seattle to the New York office as belting sales engineer. L. F. Koepp has been made manager of mechanical sales of the Seattle branch.

ARMSTRONG CORK PRODUCTS CO., Lancaster, Pa., has appointed E. C. Frazier temporary manager of the Chicago district sales office until a successor to W. M. Fencil who resigned to establish his own business as a manufacturers' representative, is named.

D. H. Spicer, who has been appointed assistant manager of the Replacement Sales Division of the Asbestos Mfg. Co., with headquarters in Huntington, Ind.

Five new divisional sales supervisors have been appointed by Bendix Products Corp. They are (left to right): H. W. Rothkoph, charge of sales for Bendix-Feragen and Bendix-Cawdrey; G. L. Everback, charge of sales, brake and lining divisions; J. F. Held, charge of marine products sales; D. E. Johnson, radio products sales head; C. R. Markham, B-K Vacuum Power Brakes and Stromberg carburetor sales supervisor

NEW COMPANIES

FITZPATRICK - THORNTON TANDEM FLEET SALES CO., 780 11th Ave., New York City, has been formed by P. G. Fitzpatrick to sell Thornton four-wheel-drive units. Mr. Fitzpatrick will cover the Eastern territory.

ELSBERT MFG. CO., 353 W. Grand Ave., Chicago, has been organized by B. J. Gribsby, president of the company, to manufacture and sell a new type of slow speed, high torque fractional horsepower electric motor; also ignition devices and systems for greater efficiency in internal combustion engines.

First National Trailer Census

Results of the first special canvass of the trailer industry, just announced by Director William L. Austin of the Bureau of the Census, reveal that factory sales of all types of automobile trailers in 1936 totaled 53,646. Sold by 357 manufacturers, these trailers had a net wholesale (f.o.b. factory) value of $27,421,763.

Included in this report were the 2,519 motor truck trailers, produced by 67 manufacturers, valued at $2,296,444; and 23,875 motor truck semi-trailers produced by 116 manufacturers and valued at $15,848,150.

FACTORY SALES OF MOTOR TRUCK TRAILERS AND SEMI-TRAILERS, BY STATES: 1936[1]

[Reports were made on an f. o. b. factory basis, and therefore the statistics refer to the States in which the trailers were produced and not to distribution by sales outlets.]

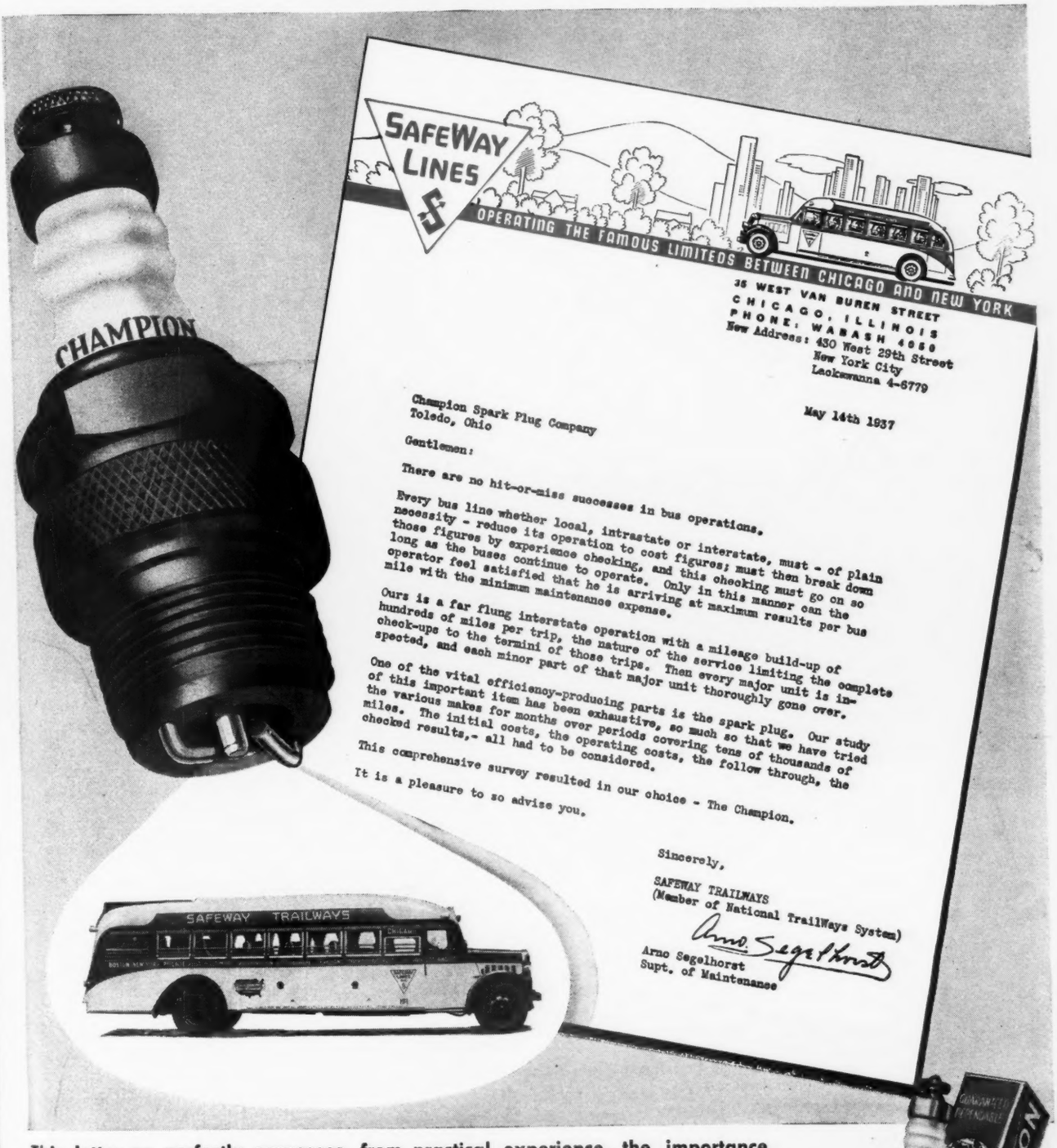
State	Number of Manufacturers	Number of Trailers Sold	Total Factory Value[2]
United States	144	26,394	$18,144,594
California	29	1,579	1,634,985
Illinois	9	257	202,874
Indiana	4	243	201,012
Missouri	7	800	686,936
New York	7	148	76,046
Oregon	6	189	168,252
Pennsylvania	7	297	428,774
Texas	6	771	302,300
Michigan and Ohio[3]	19	12,487	9,904,594
All other States	50	9,623	4,558,821

[1] Includes statistics for all types of motor truck trailers.
[2] Net wholesale (f. o. b. factory) value based on prices charged to dealers, distributors, and branch agencies, including excise taxes.
[3] Statistics for these States shown in combination to avoid the possibility of disclosing the sales of individual manufacturers.

Additional News Page 110

Successful Fleet Operations Depend on Spark Plugs

YOU CAN DEPEND ON CHAMPIONS



This letter so perfectly expresses, from practical experience, the importance of spark plugs in successful fleet operations, that Champion reproduces it exactly as written, with thanks to Safeway Trailways and Mr. Segelhorst.

CHAMPION

EXTRA-RANGE SPARK PLUGS

CHECK AND CLEAN SPARK PLUGS WHEN YOU CHANGE OIL

Beauty Make-Up

(CONTINUED FROM PAGE 31)

immediately wiped down with a dry cloth. The truck is then sandpapered. If the panels are of a fibrous composition grade 1½ sandpaper is used. If the panels are of metal, grade 1 paper is used. Then the job is dusted and wiped down with a tack rag after which it is ready for the primer coat.

One coat of synthetic primer is applied and allowed to dry overnight. This primer is cut 15 per cent and is sprayed on with the gun held about 10 in. from the surface. A good wet coat is applied. The next day the job is spotted and at this point our procedure varies. If the panel is of composition, all holes, bruises, dents and cracks are spotted with a heavy synthetic spotting putty that drys hard and the job is then glazed with a wide knife. However, if the panel is of metal, the body is just spot puttied. After their respective treatments the panels are ready for the surfacer.

The synthetic surfacer is cut about 25 per cent and a good wet coat is sprayed on. The spray man starts at the corner and goes completely around the body applying five coats of surfacer in one continuous operation if the panel is of composition, and three coats in one continuous operation if the panel is of metal. Overnight drying is allowed. The next day the surface is rubbed using a rubber rubbing block with No. 180 wet or dry sandpaper. This is followed by a wash using a hose under city pressure and the body is then dried with a chamois and wiped with a tack rag. The truck is now ready for the color coats.

THE Van Sciver color is a special blue which is cut 20 per cent and sprayed continuously until the truck has been encircled three times. These three coats must be applied rapidly in succession with not more than half an hour between the start and finish of each coat, otherwise each coat will have set too much and overnight drying between coats will be necessary. The finish coat is sprayed with a gun of 6½ lb. air capacity per minute and with a pressure at the gun of 70 lb.

This finish is rubbed down the next day with No. 360 wet or dry sandpaper and water. At this point the lettering and gold leaf is applied and the striping is done. Before applying the gold leaf, the area around the leaf is pounced with whiting to prevent the leaf from sticking, then a coating of varnish size is brushed on. This sizing contains a little chrome yellow which gives the size sufficient opaqueness to permit the painter to follow his guide lines easily. When the varnish size becomes tacky, the gold leaf is applied. About half an hour is allowed for the varnish to become tacky. The size that overlaps the edges of the letters is then wiped away and the letters edged in flat ivory paint to finish them off.

Washing is a part of the beauty program

With the lettering finished, the entire body is washed down with clear water and wiped dry with a chamois. Then clear varnish coats are applied. However, from this point on, the finishing process is different from that of other shops that we know of. Our

(TURN TO PAGE 72, PLEASE)

(CONTINUED FROM PAGE 70)

painters first spray one coat of long oil clear rubbing varnish which flows easily, has an excellent gloss and drys hard. This varnish is not thinned. Instead it is put into a bucked of hot water and allowed to remain until the varnish has become quite warm. This serves to loosen up the varnish to a thin consistency, making it easier to spray without actually cutting it. Thinning has a tendency to cut the gloss and durability of the material and so we avoid thinning in this case. This single coat of rubbing varnish sets overnight and is then rubbed lightly with 360 wet sandpaper. Following this the body is hosed down and wiped over with a tack rag and the body is ready for the last application.

To finish the job, one coat of long oil flowing varnish is sprayed on after it, too, has been thinned by warming in a bucket of hot water. This coat drys overnight—and the job is complete with a strong, hard, yet elastic, high lustre finish and no sign of orange peel anywhere. A similar procedure is followed for the fenders, hood and cowl, which like the body, are done in deep blue. The belt line is finished in a light blue with two gold stripes running its length top and bottom. The radiator is finished in gold as is the roof.

In finishing the top, it is first washed and sanded and then two coats of liquid gold are applied which completes the job.

OF course, it is not always necessary to strip down a paint job. We frequently find it necessary merely to refinish over the old blue which has a tendency to fade, eventually. On such occasions the body is first washed with turps and wet sanded. We then glaze in or spot holes and bruises and sand them smooth. After this it is washed down and tacked thoroughly and masking compound is applied over all gold leaf and stripes.

The body is now ready for the finishing coats of blue. Two wet coats are sprayed on in one continuous operation and allowed to dry overnight. No attempt is made to apply the second coat in a mist spray due to the fact that the job is so large that the mist spray will dry unevenly before the painter can go completely around the body.

After the application of the blue, the masking compound is removed and the blue finish is rubbed with 360 sandpaper and then tacked. Then one coat of flowing varnish is sprayed on, completing the job.

ONE difficulty we are always having, and one which is common to all truck operators, is in avoiding the markings on the sides of the bodies caused by trees. Our trucks are quite large and it is almost impossible for a truck to draw up to the curb without being marked by some tree branches. These markings look rather ugly and give the appearance of a neglected truck. To remove them, the body is washed down with turps and then rubbed with 360 sandpaper which is very fine and does not leave scratches. Any bad spots which appear on the body are touched up with synthetic enamel and when dry the body is again washed and tacked. One coat of flowing varnish is then applied and allowed to dry overnight and all next day, if possible. No spotting is done on this job unless the entire body were to be recoated with blue. This simple treatment eliminates the tree markings completely and brightens up the job at the same time.

However, the job of keeping up the appearance of trucks does not end here. There is still the problem of keeping trucks washed and clean and the way this is done has much to do with the way the paint holds up. Whenever possible, trucks are washed nightly by

(TURN TO PAGE 74, PLEASE)

(CONTINUED FROM PAGE 72)

first wetting with plain water and then washing with an oil base soap. This soap is dissolved in water and applied with a washing brush. One side of a body is soaped at a time and immediately rinsed with clear, cold water and allowed to dry. No chamois is necessary as no streaks are left on the panels. A high pressure hose is used on the chassis and the wheels and hood are cleaned with a sponge.

When it is impossible to wash a truck or when it shows only a very slight coating of dust, the body is simply dusted down with a mop containing just a few drops of oil to pick up the dust.

Our trucks travel to all parts of the state and on some roads that are pretty dusty. Such operating conditions sometimes require us to wash engines at least once every two months. At such times, the engine is wiped down with a kerosene rag and then hosed off with a high pressure hose. Trucks operating only over super-highways have their engines washed every 6 to 12 months.

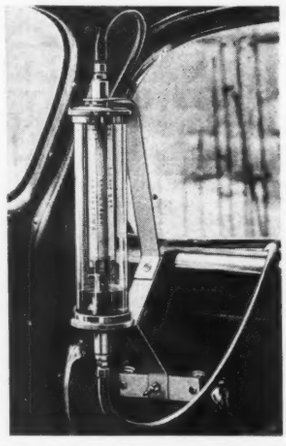
The average time spent on a truck for complete strip-down and refinish paint job is about 200 man hours. This includes labor on the lettering, etc. Time spent on our large semi-trailers averages about 350 man hours. If this seems like a lot of time, consider the size of our trucks. We have 16 trucks whose vans are 28 ft. long, 8 ft. wide and over 11 ft. high. We also have two huge semi-trailers, one of which is 40 ft. long and the other is 45 ft. long. In addition, we operate several freight trucks and several smaller delivery trucks for a total of 24 units. Three new 28 foot vans now being built for us will shortly be added to this fleet.

Some idea of the amount of material used on the larger jobs may be gained from this record of material used for the semi-trailer job. It required 2 gal. of primer. 4½ gal. of surfacer, 7 gal. of thinner, 2 gal. of rubbing varnish, 2 gal. of flowing varnish, 4½ gal. of blue and 2 gal. of liquid gold.

One thing to keep in mind is that this beautifying program is not for local consumption alone. Our trucks deliver anywhere, covering all of western Pennsylvania and go as far south as North Carolina and as far north as Boston, Mass. That's a lot of territory and a lot of people see our trucks. Their appearance is the best advertisement those trucks can carry with them and our shop foreman, E. P. Sylvester, sees to it that that message never lets the public down.

Gas Test Meter

A CONTINUOUS reading flow meter which greatly simplifies the procedure for making gasoline economy tests on passenger cars and commercial vehicles has been placed on the market by the Houser Engineering and Mfg. Co., Bluffton, Ind. This flow meter is intended for use at factories, research departments, service stations, and by fleet operators. The Houser Automatic

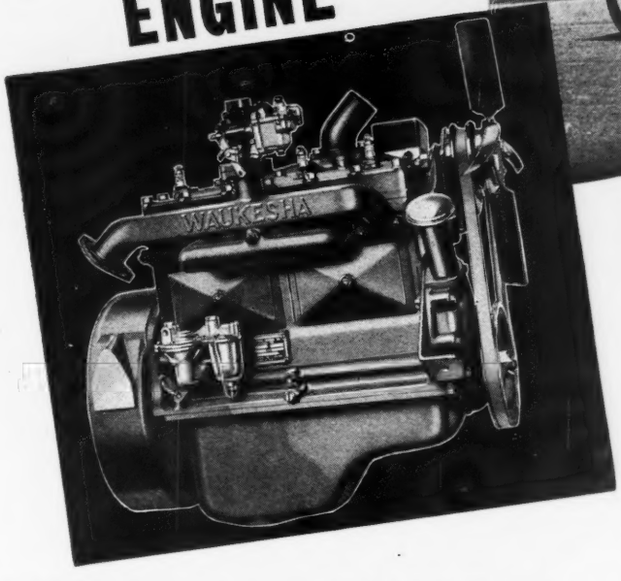


Flow Meter flows by gravity through a series of small holes into the large glass tube, and from there into the carburetor.

An inner cylinder is calibrated in one column showing gasoline consumption for ½ gallon to 10 gallons per hour, together with eight other columns representing speeds from 10 to 80 miles per hour.

Economical • Speedy • Light in weight

. . . . this COURIER FOUR ENGINE



This Ful-Ton truck has a Model FC Waukesha *Courier Four* Engine, 3¼ in. x 4 in., 133 cu. in. displacement. These Waukesha features—Blue Flame Manifold, down draft carburetion, high compression Ricardo Head, full pressure oiling, large parts—give this engine more power, quicker acceleration, smoother operation, and high economy both in fuel and up-keep.

WRITE TODAY FOR BULLETIN 994

CUTS DOOR-TO-DOOR DELIVERY COSTS

Mr. and Mrs. Consumer want what they want, *when they want it*... whether it's milk or mutton. To get it there quickly... at the lowest cost per stop... is the point. Net profits depend on it.

Powered with the speedy, light weight, low cost Waukesha *Courier Four* Engine, light delivery trucks like this Ful-Ton are not only able to compete with but actually beat horse drawn equipment in door-to-door delivery work. It is a lively performer—takes a 7.94 per cent grade in high gear at 30 m.p.h. *And its economy is exceptional*—the engine will idle for an hour and forty-five minutes on one quart of gasoline.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

WAUKESHA ENGINES

C & D Decision

(CONTINUED FROM PAGE 34)

cumbersome and attempts through a series of principles deduced from the character of the operation to justify the validity of the application, and to classify the corporation as a contract carrier subject to provisions of Part 2 of the Act. Attempting to draw a distinction between "motor vehicle operations" and "pickup and delivery service by truck or wagon," the majority opinion holds flatly that the operations performed constitute such "motor vehicle operation" as to bring it within the purview of Part 2 of the Act, and further, interprets the word "transportation" as set out in the law as including only such services as a carrier is required to provide. Holding that the operations are not specifically exempted, the opinion decides that the law intended to impose regulation upon all forms of motor transportation not so exempted. The decision suggests that the definitions in the Act are functional and that the status of the carrier is determined by what the carrier does or what it proposes to do.

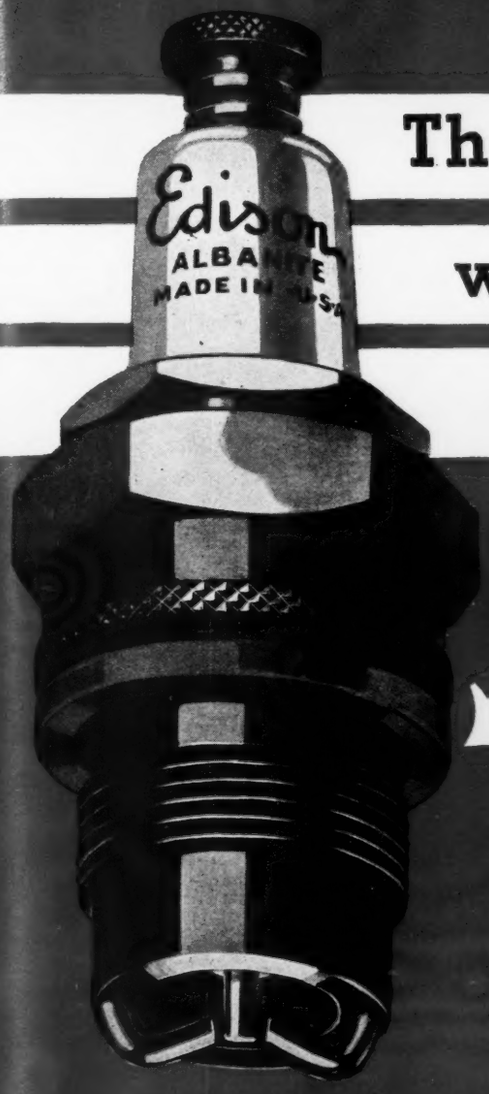
Commissioner Caskie, in a separate concurring opinion, bases the holding that the corporation is a contract carrier squarely on the statutory definition of contract carrier. Were it not for this definition Commissioner Caskie would hold the corporation to be a common, rather than a contract, carrier.

Commissioner Eastman, calling attention to the fact that the entire responsibility for the corporate operations is assumed by the railroads, would go a step further and make the railroads responsible to the Commission for the acts of its subsidiary. He holds that the corporation is a mere agent of the railroad and is a convenient facility substituted by the railroad for a service it might well perform by its own trucks. Holding that the operation comes squarely within the definition of the term "common carrier by motor vehicle," he expresses surprise that the majority could reach a conclusion that a "motor vehicle operation" is not subject to Part 1. He characterizes the attempt of the majority in commenting upon Section 203(a) as an "attempt to give a little feeble life to the clause," suggesting that certain motor operations are subject to Part 1. The thought that the Commission may have jurisdiction over railroad collection and delivery service under Part 1, but not over "motor vehicle operations" which produce the identical service, ignores both prior decisions of the Commission and of the courts. Since the "services" which carriers furnish are the result of "operations," Commissioner Eastman holds that they can have no existence apart therefrom and the term "motor vehicle operations" was, in his opinion, intended to cover the transportation service and all that enters into it. Thus, in Commissioner Eastman's opinion, the majority have placed themselves in the anomalous position that "motor carrier vehicle operations" of railroads might well be subject to Part 2, whereas the service resulting from such operations would be an integral part of railroad "transportation" and subject to Part 1.

The decision has a great deal more of interest for motor carriers than in merely deciding the status of Scott Brothers Incorporated as a contract carrier. It is interesting because of the divergent views of the Commissioners. The majority undoubtedly decided this case not so much by a careful interpretation of the law, but through a fear that the railroads might not be adequately regulated in their motor vehicle operations and that they might

(TURN TO PAGE 78, PLEASE)

The New Edison Spark Plug with the Built-In Gasket saves gas . . . cuts costs



For 100% gas-tight seal install Edison

These spark plugs have the built-in gasket which overcomes compression losses due to gas leaks. A patented Edison feature that assures quicker installation because of concentric fit.

How about a spark plug that definitely *increases* gas mileage and *reduces* replacements? Does such a development interest you?

Scores of fleet operators consider this new Edison Spark Plug a real "find". The built-in, leak-proof gasket—an exclusive, patented feature—makes a positive compression-tight seal between plug and engine block.

Many maintenance men have started with Edison by installing one set and checking performance on a single truck. The results have proved so convincing in these cases that Edison is rapidly replacing original spark plug equipment throughout their fleets.

There is a type of Edison plug, in one and two-piece construction, for every commercial vehicle.

Your Edison jobber can give you definite examples of how and where these spark plugs have out-performed and out-lived the best competitive products in the field. Or you may write us for convincing case records.

EDISON-SPLITDORF CORPORATION, West Orange, N. J.

ONE OF THE Thomas A Edison INDUSTRIES

(CONTINUED FROM PAGE 76)

gain an unfair advantage in competition with motor vehicle common carriers. It illustrates the desire of the Commission to extend the authority given to it by Congress if it becomes necessary to do so to accomplish what it terms the "broad purposes of regulation." This is a common attribute of a Governmental regulatory body.

Commissioner Eastman does not share these views and believes that there is little danger of the operations getting out of hand, due to the wide authority now enjoyed by the Commission with reference to the railroads. He clearly sees the inclination of the majority to enlarge its powers under the law.

"Statutes," he says, "are by no means immutable. If the railroads should through these motor vehicle operations gain unfair advantages over their competitors or indulge in other reprehensible practices because of deficiencies in Part 1, it should not be difficult for Congress to correct these deficiencies. It is not part of our duty to usurp the functions of Congress in this respect."

Commissioner Eastman apparently thinks that the majority may be laboring under more or less of an obsession in bringing all motor carrier "operations" as defined by it under Part 2 and expresses the fear that it will do more harm than good in possibly going beyond the powers granted to the Commission by Congress. He also recognizes the enormity of the job of administering the Motor Carrier Act when he says "The practical difficulties in the effective administration of the Act are very great indeed and it is essential that the process of administration should in every practicable way be simplified to the extent consistent with the purposes to be accomplished." To place what he terms as "mere agent operators" who do not serve the people directly in the same category with other motor carriers and to give them a separate status from that of their principals adds, in his opinion, "unnecessarily to the confusion and difficulties of our administrative duties, and that not only the Commission, but also the carriers and particularly the agent operators, will in consequence be burdened unduly."

Commissioner Eastman's New Deal tendencies are indicated in the *dicta* contained in his dissenting opinion, in which he mentions the influence of labor organizations. He suggests that many of the ills incident to the owner-operation of motor vehicles may be alleviated by the prospective fixing of maximum hours of service for employees and the influence of labor organizations. He suggests that the exploitation of owner-operators is much the same thing as the exploitation of labor, and that the rapid development of labor organizations in the motor carrier industry and the increasing strength of such organizations will "constitute safeguards against the exploitation of labor, and there are already indications that the organizations recognize the threat to labor conditions if owner-operator employment is not brought within the scope of their influence, and are taking steps accordingly."

Thus the over-shadowing power of labor organizations is forecast and recognized even in a decision of the Interstate Commerce Commission!

Ed. Note—As forecast in Mr. Johnston's article of last month, the Commission has just issued an order requiring contract carriers to file copies of all contracts in force every twenty days. The original law provided for the filing of minimum charges only, but the Commission finds it discretionary to require all contracts to be filed in lieu of minimum charges. (Ex Parte No MC 9, June 8th 1937.)

". . . . We ran these Valves 117,072 MILES before pulling the motor down"

(Signed) **R. H. JOHNSON**

Supt. of Maintenance
Union Bus Company
Jacksonville, Fla.

● "The valves were in good shape with compression very even all the way along on all six cylinders and they would have run 150,000 miles if it had not been for rebuilding the motor."

Made of Silcrome X steel, faced at seat and tip with stellite, Thompson Aerotype Valves are unequalled for resistance to heat, battering, pitting, corrosion and wear.

Maintain engine power and economy for longer periods between re-grinds by standardizing on these longer wearing valves.

THOMPSON PRODUCTS, INC.
CLEVELAND • DETROIT

Thompson *Aero Type* Valves

Body Design

(CONTINUED FROM PAGE 33)

which he must work when he gets back to his office and begins putting the design on paper. In these early stages of discussions, appearance does not play as important a part as do the load, number of doors, types of material and constructional features.

As an example, let us consider for a moment a parcel delivery unit. First, the designer, together with the operator will consider the size of the route to be covered and its characteristics whether city or suburban as these constitute an important part in determining the type and size of body to be used. With this unit it was found that the load could be carried on a ¾ to 1 ton chassis and that the loading space required would not have to be over nine feet long to be in good proportion to its height and width. The ideal unit in this case then was a conversion unit. By converting, that is by moving the steering column and control pedals ahead on a ¾ to 1 ton chassis we had a job large enough to carry the load with a short wheelbase to allow easy handling in city traffic and ideal working conditions for the driver with a low step and sliding doors on each side. It is here in these preliminary discussions that a great many of the requirements of the bodies are worked out. The sizes, location and types of doors are determined by a study of the loading and unloading conditions. The height of the floors and tail gates is very often controlled by platform heights and door locations influenced by loading conditions. In the cases of insulated bodies the proper amount of insulation, the refrigeration requirements, the icing, shelving, etc., should all be discussed before any actual lines are placed on paper because all these things together must be considered as they have a very important bearing on the size and appearance of the body. The designer should have a knowledge of all these things in order to make intelligent recommendations.

HAVING discussed and noted all the operating requirements of the body, the next consideration before doing any design work should be a very careful study of the materials to be used. The designer should have a knowledge of all available materials and their proper application to different types of bodies so that he can make intelligent recommendations to the fleet operator. Materials play a very important part in the appearance and cost of the body, and because the fleet operator is not familiar with all materials available the designer is very helpful at this point. In the case of the Hanscom Baking Co. body illustrated the use of stainless steel mouldings and polished cast aluminum lettering was recommended by the writer which resulted in effecting a very distinctive appearance. Advantages to be derived from the use of such materials are often overlooked by fleet operators and in cases such as these, the designer acts in the role of an architect whose entire time is devoted to the search for new and more practical materials. Having concluded the preliminary discussions, recommendations are suggested after which the designer proceeds with preliminary sketches.

Consideration of appearance from the standpoint of size, lines, color and construction are essential. In the case of the writer a great deal of consideration is given to harmonizing the body lines together with the chassis. These lines where at all possible should be designed to blend into the lines of the chassis giving it the appearance of a complete unit and for this reason it is to be noted that a scale drawing is essential to accomplish harmony and

(TURN TO PAGE 84, PLEASE)

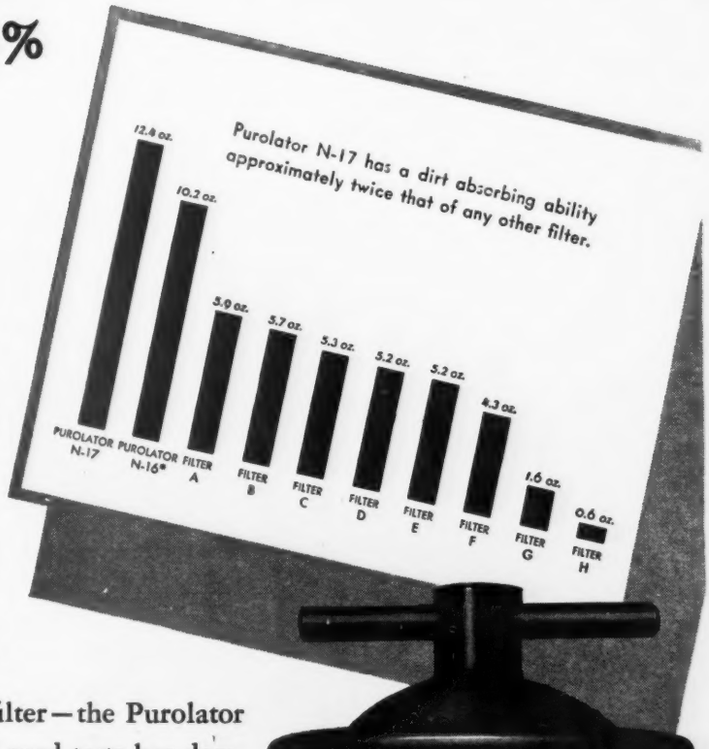
ADVERTISING PAGES REMOVED

By actual test—

THE NEW N-17 PUROLATOR

. . . ABSORBS 100% MORE DIRT

. . . KEEPS OIL CLEANER



Graphic results of tests made to determine the actual absorbing capacity, in ounces of crankcase dirt, of the new N-17 Purolator and other depth type filters. All filters were tested under exactly the same conditions: 40 lbs. pressure—160°—SAE 30 oil.

Even distribution of oil and a flow rate determined by exhaustive tests to be most efficient, enable the new N-17 Purolator to *effectively* filter the entire crankcase contents more often than any other filter.

Purolator engineers present . . . a new oil filter—the Purolator N-17—which in exhaustive laboratory and road tests has demonstrated its superiority over any other depth type filter. They urge every fleet maintenance man interested in economy to compare the length of time it keeps oil clear and clean . . . compare the length of its filter element life . . . compare the simplicity of its element replacement.

The greater savings in operating costs, engine wear, and maintenance expense afforded by this filter are just as definite and provable. Your inquiries are solicited. Motor Improvements Inc., 365 Frelinghuysen Avenue, Newark, New Jersey.

N-17 is for engines of 7-10-qt. crankcase capacity.
***N-16,** identical to N-17 except in size, is designed for engines of less than 7-qt. capacity.
The filter element, in its metal container, can be lifted and replaced without use of tools.

PUROLATOR

The Oil Filter

When writing to advertisers please mention Commercial Car Journal

(CONTINUED FROM PAGE 80)

practical load distribution.

Where construction costs and materials restrict the use of curved lines, very effective and distinctive appearances can be attained by the uses of various materials, moulding treatments and painting layouts. I have at times used stainless steel for both panels and trim, burnished and polished aluminum, fabric panels and raised panels, to create a distinctive body where the use of curved lines and slanted rears were restricted. A designer should have a knowledge of all these materials and know how to apply them effectively when he is working up preliminary pencil sketches to determine the lines of the body.

When several designs are completed in pencil sketch form giving a selection in appearance and comparative costs of construction, they are submitted to the fleet operator for his criticisms. At this time any changes in lines or materials are discussed and a final selection of color schemes and lettering layouts is made. In the case of an operator who has a standard color scheme, this is considered when the preliminary sketches are first made so that it can be applied to the new design in a pleasing manner. The designer should have a knowledge of color and available shades of paint in order to make proper color recommendations. In recommending colors consideration should be given to the vocation in which the body is operating such as white for laundries, black for coal and fuel, yellow for bakeries, and red or orange for gasolines and oils.

The lines of the body, materials and painting and lettering determined, the designer then prepares a finished drawing and detailed specifications of the body. In some cases two sets of drawings are worked up, one a picture drawing rendered in color to show the operator how his unit will appear on the street and the other is a detailed drawing giving dimensions and details of construction which can not be taken care of clearly in the specifications.

The designer's job is not finished when he turns over the drawings and specifications. He should be retained to give any assistance possible to the builder and to straighten out any difficulties which might arise during the course of construction.

WORKING with the body builder the designer works a little differently when designing a vocational body. His first task is to make a thorough study of the requirements in the vocation for which the body is to be used. Having gathered all the information possible from the leading operators in that vocation he must analyze these data and prepare recommendations to the builder before proceeding with any design or drawing work. At this time it is determined whether the body should be a step-in-drive unit, a vestibule panel, or a body behind the cab, the number, size and location of the doors, whether a straight floor or wheel pockets should be used and any other operating requirements. Next, materials and construction are considered. Where heavy-pay load requirements are to be met, aluminum or Hy-tensil steel might be selected, or an all steel welded construction where strength and production are important or plymetal where clear smooth panels, strength and weight are considered.

With these points decided the designer's routine is somewhat the same as it is when working for a fleet operator. However, in addition to working up preliminary line drawings, finished line and color drawings and specifications, he should at the same time give very careful thought to available material sizes that can be purchased without further fabricating on the part of the builder in order to step up the speed of production, lower the labor costs and eliminate waste.

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Only P.O.B. PERFECT SEAL *Could stand such a Sealing Test*

SIZZLING SPEED
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BUT . . . Every Gasket, Cap Screw, Stud, and Joint Held "LEAKPROOF" to the End

That's why "PERFECT SEAL" is original equipment on 16 cars and many trucks and tractors. It's a winner.

Sixteen times, car engineers have tested and then selected "PERFECT SEAL" over all other sealers to prevent seepage of cooling liquids, oil, etc.

"PERFECT SEAL" IS DIFFERENT — it never dries out — it permits easy disassembly at all times — it is the proven leader as a sealer on engines.

Head gaskets coated with "PERFECT SEAL" don't leak. That is factory instructions on 16 popular cars.

Felt gaskets, cork gaskets, composition gaskets do a better job and last longer with "PERFECT SEAL".

Water hose connections are more leakproof and hose lasts longer when coated with "PERFECT SEAL".

Spark plugs and stud threads in aluminum will not crumble when coated with "PERFECT SEAL".

There Is No Substitute *There Is No Substitute*

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P. O. B. MANUFACTURING COMPANY, CINCINNATI, OHIO

How the Current Regulator, Cut-Out Relay and Voltage Regulator Operate

(CONTINUED FROM PAGE 29)

The resistance may be inserted into and removed from the generator field circuit automatically, by means of a magnetically operated switch or magnetic switch.

A MAGNETIC switch of the current regulator type is shown schematically in Fig. 2. The simplified circuit shows the current regulator unit and the cut-out relay without their actuating windings, the units being shown simply as switches which, of course, they are. Note the similarity between this simplified circuit and the generator field circuit light switch controlled field resistance of Fig. 1.

The current regulator windings are composed of a few turns of heavy wire and carry the entire output of the generator. The contact points are normally held closed by spring tension which retains the armature in the up position and the generator field current is therefore conducted directly to ground through these points. When the current flowing through the current regulator windings—which is total generator output—reaches the valve for which the regulator has been set, sufficient magnetic force is created to overcome the armature spring tension. The armature is attracted downward toward the regulator cores and the contact points are separated. With the points separated the resistance is inserted into the generator field circuit and the generaor output is reduced. Refer to Fig. 2.

But the instant the current flowing through the regulator windings begins to drop off, the magnetic force created by this current also drops off. It is quickly reduced to a value at which it can no longer retain the armature in the down or open point position and the armature spring pulls it up, closing the points. This shorts the resistance out of the generator field circuit and the generator output increases. But upon reaching the value for which the regulator is set, the armature is again pulled down and the resistance once more inserted into the generator field circuit. This is a vibrating action which takes place so rapidly the armature cannot be observed to move, regulating for a constant output.

The current regulator unit operates only at the value for which it has been set. For example, if it is used with a generator which has a 28 ampere rated output, the regulator is set for this output and will operate only when the generator attempts to exceed the 28 ampere setting. Thus the current regulator may be considered as a current limiting device. Fig. 3 illustrates the action of the current regulator.

ANOTHER current limiting device which is exceedingly well known is the third brush of the third brush generator. Due to the third brush effect, the generator cannot, within the specified voltage range, exceed the output for which the third brush has been set.

A somewhat undesirable feature of the third brush generator, especially in the higher output units, is that as the voltage increases, the output increases. Thus with a fully charged battery, when only a small amount of current is needed, the line voltage will be the highest and the generator output will, therefore, be the greatest. And the greater this overcharge to the battery is, the higher the battery voltage will go and thus the higher the generator output will become. This condition was not so serious in the past when generators were not built for high outputs.

But today, with generators capable of putting out 20 to 28 amperes and higher, if the high amperage were "pumped" through the battery, the voltage of a six volt battery would soar to 8.5 or 9.0 volts and higher. Such an excessive charge would quickly ruin the battery. As for the ignition points and the light bulbs, 8.5 or 9.0 volts slapped on them would greatly shorten their lives.

To prevent this excessive voltage, it is necessary to use some form of voltage regulator or voltage limiting device with the higher output generators in use today. As a battery becomes charged, its resistance increases, and, to get the same charging rate through it, the charging voltage would have to be increased to overcome the increased battery resistance. Therefore, if the voltage is limited by a voltage regulator, the gradually increasing resistance of the battery as it comes up to charge will result in a gradual decrease in the charging current. The voltage regulator prevents the generator voltage from increasing to overcome the increased battery resistance and force or "push out" the same output as at low battery voltage.

ILLUSTRATED in Fig. 3 is a vibrating voltage regulator, shown schematically. Note the simplified circuit is exactly as shown for the current regulator in Fig. 2. The voltage regulator is also, of course, a magnetic switch, but its windings are of two types, a voltage or shunt winding of many turns of fine wire, and a current winding of a few turns of heavy wire.

The voltage winding of the regulator is the governing winding and it is connected through the ignition switch across the battery so that battery voltage is impressed on the winding. When the battery is low, the voltage regulator unit is inoperative, the contact points closed. As the battery approaches full charge, the voltage becomes great enough to force through the voltage winding of the regulator sufficient current to cause the regulator to operate. The magnetic force due to this current flow now has increased to where it is able to over-come the armature spring tension and pull the armature down to the voltage regulator unit core, separating the contact points. The generator field current is now forced to flow through the resistance to ground, causing a reduced generator output.

When the points are closed, the generator field current is conducted to ground through the regulator current winding and the points. When the points separate, the current winding magnetic field collapses completely. This complete collapse of the current winding magnetic field plus the reduced voltage of the generator due to the insertion of the resistance in the generator field as the points separate, causes the total magnetic field to drop to where it can no longer hold the regulator armature down and the points quickly close again.

When the points close, the voltage increases again to the regulator operating voltage, the current winding magnetic field builds up again, and the total magnetic field is sufficient to pull the armature down again. The voltage winding is the governing winding, the current winding acting merely as an "accelerator" winding to speed up the action of the armature. This is a vibrating action which takes place very rapidly, regulating for a constant voltage.

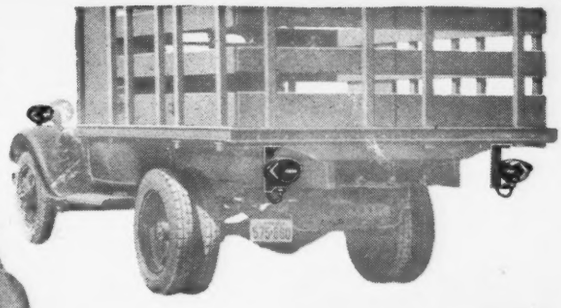
The voltage regulator unit may be used with either of the two current limiting devices, the third brush generator, or the vibrating current regulator and shunt generator.

When used with the current regulator, both units are mounted together with the cut-out relay on the same base and enclosed by the same cover. Either the current regulator unit or the voltage regulator unit operate at any one time, both never operate at the same time.

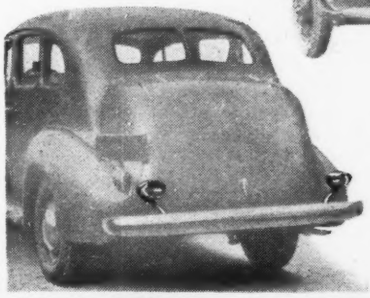
When the requirements of the connected electrical load are large and the battery is low, the current regulator unit will operate to prevent the output from exceeding the rated output of the generator. If the requirements of the connected electrical load are reduced

(TURN TO PAGE 90, PLEASE)

GUIDE *introduces an important aid to safe driving in the new* DIRECT-SIGNAL LAMP



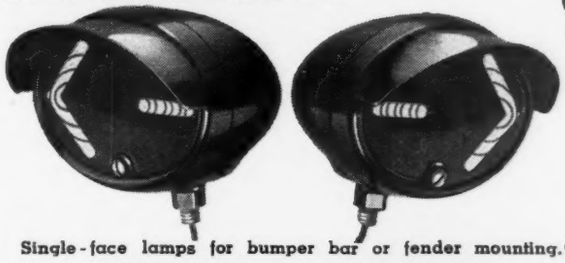
Illustrating mounting of single-face Direct-Signals on rear of truck, and double-face signal on front fender.



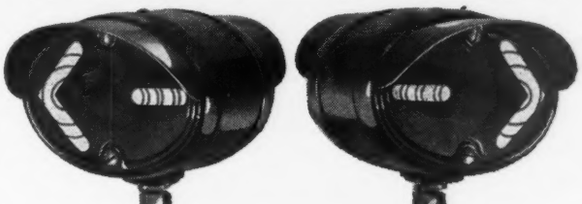
Installation of single-face Direct-Signals on passenger car.

The Direct-Signal switch is conveniently mounted on steering column. An indicator lamp on the switch shows driver that signals are operating.

For TRUCKS TRAILERS BUSES *and passenger cars*



Single-face lamps for bumper bar or fender mounting.*



Double-face lamps for front fender mounting.*

**Flush and side body mountings also available.*

GUIDE announces a new driving aid—Direct-Signals for indicating right and left turns. These signals meet the specifications of states where their use is required, and others where legislation covering their use is now in preparation.

Guide Direct-Signals are controlled from a switch conveniently mounted on the steering column. A right or left turn is indicated by an arrow in a special amber lens, clearly visible, day or night—in rain, snow, sleet or fog. A flasher warning light, built into the switch, comes on with the signal, remains out when not in use or when burned-out bulbs or electrical failures occur. Double-face lamps are provided where required by law or operating conditions.

Guide Direct-Signal Lamps are sturdily built of high quality materials, for long life and dependability in continuous operation.

Your nearest Authorized Guide Lamp Distributor or United Motors Branch can supply Guide Direct-Signal Lamps to fit your requirements.

Guide

LAMP DIVISION
General Motors Corporation
Anderson, Indiana

UNITED SERVICE MOTORS
Guide Lamps

(CONTINUED FROM PAGE 88)

and the battery comes up to charge, the voltage regulator unit operates to taper down the output and prevent high voltage in the circuit, reducing the generator output to what is required by the connected electrical load plus a small sustaining charge of a few amperes to the battery.

FIG 4 illustrates schematically a current and voltage regulator. Note the simplified circuit is identical to these previously shown except that there are now two switches in the generator field circuit and an added field resistor. On many models a second resistor, as shown, is used, in order to obtain two different values of resistance, a low resistance for the current regulator unit when the two resistors are in parallel, and a higher value resistance for the voltage regulator unit, where a single resistor is used.

Carburetor Maintenance

(CONTINUED FROM PAGE 27)

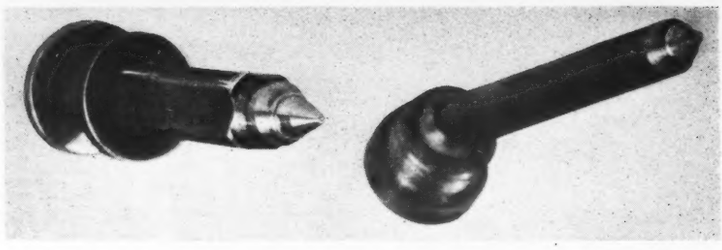
discard the part and replace it with a new one because the cost of parts is relatively low and the cost of a failure is high if it interrupts an operating schedule.

A NEW set of gaskets should be installed at every inspection and careful attention should be given to make sure that the correct carburetor to manifold gasket is used. This is especially true when a governor is used. The wrong gasket at this point can cause a step up in the vacuum and by-passing of the

Wear in the throttle connector rod results in poor idling and timing of the accelerator pump

governor. Carburetor manufacturers are packaging a complete set of gaskets as a unit to make this gasket replacement easier.

Incidentally carburetor manufacturers do not hold with this theory of jets either "growing" or wearing under ordinary conditions. It should be indicated that this phenomena is well known to them but they insist that considering the number of jets that they inspect that either "growing" or wearing is very rare and that in itself indicates a unusual condition. Manufacturers service departments are extremely doubtful of the accuracy of much of the field measuring of jets and when they explain their position it sounds very logical.



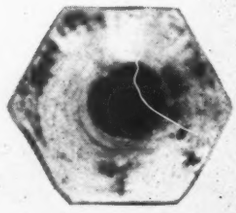
In the above may be seen the ridges in the needle valve and wear in the carburetor jet

The jets are originally drilled with extremely high speed drills for accuracy. The manufacturers have found through experience that the high speed is needed for accurate drilling. After the drilling the jets are tested on a flowmeter and the rate of flow is the only measure of a jet's ability. "How then" they ask, "can a service man stick a wire or a drill through a jet and tell that it is no longer passing the correct amount of gasoline?" The manufacturers also indicate that a large portion of the defective jets they get back are a result of having wires or drills stuck through them.

The manufacturers have also found out from their returned parts pile that many of the parts that have failed have done so as a result of being abused by mis-applied tools. The effect is the same whether the tools were good tools but used badly or the use of tools that were never made for carburetor work. This has resulted in the manufacturers making available a set of tools for carburetor work with special tools for the different series of carburetors. A set is worth about $15.

LINT is one of the greatest enemies of good carburetion and to eliminate it, it is suggested that when a place on the bench is cleared and cleaned for working space for a carburetor that it first be cleaned with a kerosene soaked cloth and then blown off with compressed air. At the various stages of work the parts should be cleaned with compressed air and tools should not be wiped with a cloth but with the palm of the hand. The amount of lint that a carburetor is able to gather up in one inspection is enough to prevent its operating for any length of time without trouble.

The actual dis-assembling procedure varies with the make and model of carburetor. In order to give this information in detailed steps on specific makes and models of carburetors COMMERCIAL CAR JOURNAL will start a carburetor series in the next issue giving the detailed steps on the popular carburetors taking one series at a time.



This jet is enlarged about six times

B & J Trailers

A COMPLETE new line of 1938 trailers featuring several innovations in design and equipment has been announced by the B & J Trailer Co., Chicago. These include a lower center of gravity, larger Timken brakes and newly designed oversize Timken Tubular axles with larger spindles and bearings. Frame heights above the ground on the three Syncro-Float chassis with gravity spring suspension have been reduced from 2¼ in. to 3 in. making the 8-ton chassis 38 in., the 10-ton 40 in. and the 12-ton 41 in.

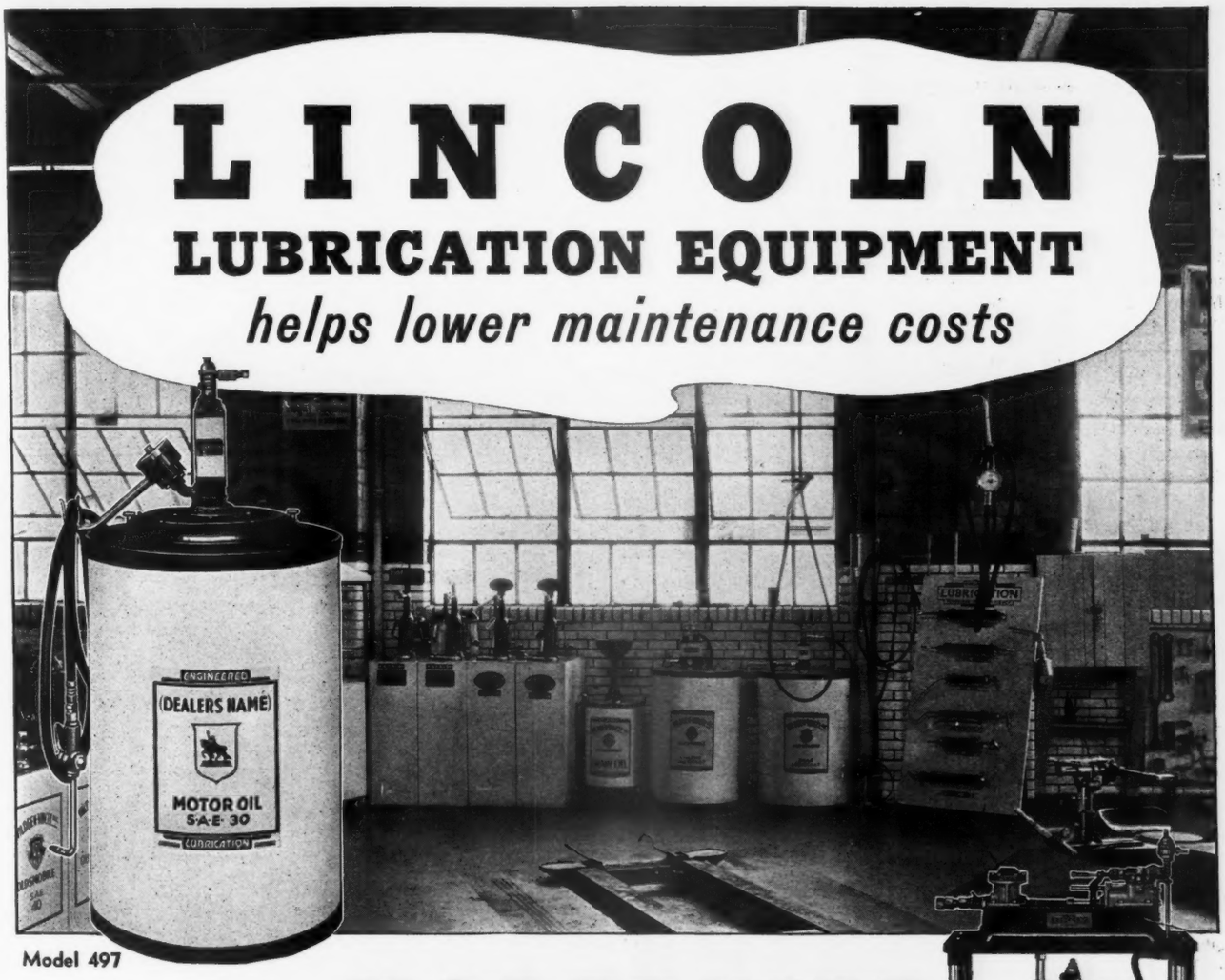
Spring Conditioner

A NEW product known as the Presto Spring Conditioner has been announced by The Renson Products Co., Conshohocken, Pa. The lubrication wedge is forced between the leaves of the spring by the handles of the tool, an ordinary grease gun is attached to the fitting and lubricant is inserted between the leaves. Easily removed when the job is done. When used with springs fitted with covers, the lubricating wedge makes a small hole in the cover, thus eliminating the necessity of removing the cover. List price $8.25.

Shim Catalog

LAMINATED SHIM CO., 21-24 44th Ave., Long Island City, N. Y., has issued a new catalog showing the varied uses of Laminum, which is laminated shim brass.

LINCOLN
LUBRICATION EQUIPMENT
helps lower maintenance costs



Model 497

Model 497 (shown above) makes it possible to fill a crank case with oil with the same speed, accuracy and efficiency with which a modern gasoline pump fills the gas tank. Consists of a 68 gallon container, automatic air operated pump, Lincoln meter pump with quart dial, 12-foot volume hose and control valve with non-drip nozzle. Meter has a totalizer which provides an accurate record of total quantity of oil dispensed as against quantity put into container.

Model 310

MODERNIZE
and enjoy all the benefits of lubricating your fleet quickly, thoroughly and economically

Time and cost studies regularly disclose that *proper* lubrication is a great contributing factor to low maintenance cost.

It does not matter whether your lubrication service requirements are large or small—there is LINCOLN LUBRICATION EQUIPMENT to properly service your fleet.

Every model in this complete line of dispensing units and guns has many important outstanding features. For example: The Model 310 AIRLINE LUBRIGUN (shown below at left). This unit is *portable*... It operates on the "two stage" principle. Primer pump lifts lubricant from the original container to the chamber of the high pressure pump which delivers it under high pressure to the control valve. This LUBRIGUN will handle chassis, fluid or fibrous lubricants with equal ease. Mounted on large wheel dolly for easy portability.

There are many other units in this line, and we urge you to ask your nearest Lincoln jobber for details.

LINCOLN ENGINEERING COMPANY

General Offices: St. Louis, Mo.
Factories: St. Louis, Mo. and Detroit, Mich.

LINCOLN
LUBRICATION EQUIPMENT

LUBMOBILE

The Lubmobile (illustrated above) operates on the "two-stage" principle. Primer pump lifts lubricant from the original 100 lb. container to the chamber of the high pressure pump which delivers it under high pressure to the control valve. Handles chassis, fluid or fibrous lubricants. For piped installations it will serve up to three outlets.

Trends of Legislation

(CONTINUED FROM PAGE 35)

brief period of time. Strange as this may seem, and despite the oft-repeated assertion that highway transportation is unregulated, this astonishing record is not abnormal when compared with the biennial legislative sessions of the past decade.

Motor Fuel Taxes

APPROXIMATELY 120 bills have been introduced this year directly affecting the taxation of motor fuel. These include scores of measures intended to increase gasoline and lubricating oil taxes. Many proposals would impose or increase taxes on chain stores, including filling stations. The total does not include many miscellaneous bills having an indirect effect. Actual gasoline tax increases of 1 cent per gallon have been enacted in Minnesota, Missouri, Rhode Island and West Virginia. New York revived its extra emergency levy of 1 cent, and the existing additional levies of 1 cent per gallon have been continued in Nebraska and Pennsylvania. These increases are presumed to be temporary, but the history of this particular type of taxation induces skepticism on this point.

North Carolina has imposed a one-quarter cent per gallon inspection fee and, together with West Virginia, Kansas, and several other states, has tightened up on its exemptions and refunds. Georgia and New Mexico have recodified their tax laws for the purpose of plugging the holes.

New Mexico placed a 7½ cent tax on diesel fuel, while California contented herself with imposing a 3 cent tax in line with the present tax on gasoline.

Motor fuel tax increases were defeated in more than a dozen states and an additional one-half cent tax in Washington was vetoed by the Governor. The trend definitely indicates that legislators are finally beginning to realize that the heavily taxed highway user is bearing more than his full share of the country's tax burden.

Registration Fees

REGISTRATION fees and carrier special taxes have always been subjects of groping and experimental legislation. The absolute lack of uniformity among the states, together with the ever shifting bases for imposing such fees, has had the effect of tossing the motorist on the waves of uncertainty and leaving him at the mercy of ever changing tides of a tax system that seems unable to find its natural and equitable level.

Some slight reductions in private vehicle fees have been observed in a few states, notably Oregon and Nevada, while increases on commercial vehicles have been imposed in others. Major increases in truck fees have been enacted in Georgia, Indiana, Minnesota, Missouri, North Carolina, Oklahoma, and West Virginia, while Utah and Colorado provided some reductions. As an offset to an increase of one cent in gasoline tax, the Missouri legislature cut registration fees 50 per cent. (This will probably be vetoed.)

The state of Utah took a bold step in the right direction by repealing the unpopular ton-mile tax and substituting in lieu thereof an unladen weight tax. An attempt was made to do likewise in Colorado, but the legislation resulted in a compromise whereby the ton-mile tax was reduced one-third.

Recognition of the necessity for beginning the motorists' fiscal year in March or later, especially in the northern states, has definitely developed during the past few years. Prior to 1937, 28 states had recognized the advantages of this thesis. Extensions or further extensions have been authorized during the present year in Minnesota, Nevada, New Hampshire, New York, Tennessee, Utah and Wisconsin, thus providing further time in which to register vehicles after January 1.

Diversion

WHILE the actual and concrete results thus far accomplished have not been as satisfactory as could be desired, it is a source of real gratification to the highway user to note that 41 measures were introduced in 23 states seeking to outlaw the misuse of highway funds.

Anti-diversion constitutional amendments have been introduced and considered in 13 states and have received favorable action in Alabama, California, Indiana and Nevada. Each of these must be voted on by the electorate and each would make it unlawful for the legislators of the future to divert the motorists' taxes by expending these revenues for other than highway purposes.

Petitions were circulated in Massachusetts seeking to bring about an amendment by referendum. Nearly 150,000 electors of the state appended their signatures, thus showing the widespread popularity of such a movement. Unfortunately, the Supreme Court of that State has found that an amendment to the Massachusetts Constitution pertaining in any wise to an appropriation cannot be initiated by popular petition.

Anti-diversion statutes were enacted in Alabama, Indiana, North Dakota, and Washington, and actual diversions were discontinued or materially reduced in Arkansas, South Dakota and Washington.

New York has again offended with a diversion approximating $60,000,000 and Massachusetts with $6,300.000; Delaware and Maryland likewise made substantial diversions, and New Hampshire is still considering the use of $1,250,000 of the motorists' money for flood control.

Probably the most outstanding tax document of the year was Governor Hoffman's disapproval of New Jersey's diversion of $7,917,860. While the legislature failed to support the veto, its action detracted not one iota from the value of his message as a state paper. It is a masterful marshalling of indisputable facts and a fearless debunking of political chicanery.

One thing is certain—the last two years have shown a marked increase in the number of legislators who are accepting the premise that *it is unfair and unjust to impose special taxes on motor vehicle transportation unless the proceeds of such taxation are applied to the construction, improvement or maintenance of highways.*

State Barriers

THE so-called "Port-of-Entry," first initiated in Kansas in 1933, spread with the irresistible ferocity of a western prairie fire until nine states beyond the Mississippi had erected such barriers against their neighbors.

Not until 1937 did this conflagration meet with effective opposition. Port-of-Entry bills were prepared for introduction in at least a dozen states and were considered in Arkansas, Georgia, Maine, New York, North Carolina, Pennsylvania and Texas. All of these bills were either defeated on the floor or failed to emerge from committee. Bills in other states died aborning.

It should also be observed that both New Mexico and Arizona have modified the restrictions of their Ports-of-Entry, especially in their treatment of private automobiles.

Reciprocity

NOT only did the Port-of-Entry proposals fail in all of the states where they were considered, but a most gratifying crop of reciprocity laws has been harvested. Washington's full reciprocity statute was reenacted in its new highway code, and California and Nevada completely reversed their former positions on the subject by enacting new laws under which reciprocal recognition is extended to the registration of other states. Idaho and Utah materially liberalized their registration re-

(TURN TO PAGE 106, PLEASE)

Complete CCJ Truck Specifications Will Be Published in August

Line Number	MAKE AND MODEL	GENERAL (See Keynote) Tonnage Rating	Chassis Price	Standard Wheelbase	Max. W. B. Furnished	Gross Vehicle Weight with Max. Tires	Chassis Wt. (Stripped)	TIRE SIZES Standard Front and Rear — D-dual rear S-single rear	Maximum Tire Size Furnished	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	Forward Sp'ds	REAR AXLE Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimension (Std. W. B.)	FRAME Side Rail Dimensions	Type
1	Chevrolet, Mas. GC	½	360	112	112	4000	2190	6.00/16S	6.00/16	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	3	Own	8¼	U	4.11–3.82	Own	O41H	158	288	e	2I	38¾	5¾x2¼x¼	C
2	..... Mas. GD	¾	430	122	122	5200	2435	7.00/17D	7.00/17S	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	3	Own	8¼	U	**4.11	Own	O41H	158	288	e	2I	48¾	5¾x2¼x¼	C
3	..... Mas. GE	1	465	122	122	7000	3030	6.00/20S	7.00/20	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	4	Own	8¼	U	5.43–6.17	Own	O41H	194	330	c	2I	57¾	7x2⅜x¼	C
4	..... Mas. SA	1½	500	131	131	9300	3120	6.00/20D	32x6*S	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	4	Own	8¼	SF	5.43–6.17	Own	O41H	330	532	p	2I	57¾	7x2⅜x¼	C
5	..... Mas. SB	1½	628	131	131	13300	3670	6.50/20TD	32x6	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	4	Own	8¼	SF	5.43–6.17	Own	O41H	330	532	p	2I	57¾	7x2⅜x¼	C
6	(*) Mas. Spc. SB	1½	525	157	157	7900	3075	6.00/20*S	32x6*S	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	4	Own	8¼	SF	5.43–6.17	Own	O41H	330	532	p	2I	83¾	7x2⅜x¼	C
7	..... Mas. SD	1½	545	157	157	9300	3200	6.00/20D	7.00/20	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	4	Own	8¼	SF	5.43–6.17	Own	O41H	330	532	p	2I	83¾	7x2⅜x¼	C
8	(*) Mas. Spc. SD	1½	653	157	157	13300	3770	6.50/20TD	32x6	Own	6–3½x3¾	216	6.2	170	78–3200	4–2¾x5½	N	Own	4	Own	8¼	SF	5.43–6.17	Own	O41H	330	532	p	2I	83¾	7x2⅜x¼	C
9	Corbitt																															
10	.... (D) D22B4T	4–5	***	149	...	.....	8200	9.75/20D	9.75/22	Cum HB	4–4⅞x6	448	17.	335	100–1800	5–	Y	Fu 5A620	5	Tim 58300W	SF	H	5.67–7.80	Tl 35100TW	W84IA	575	660	A	2I	61	8¾x3¼x¼	T
11	.... (D) D22B6T	5–6	***	150	...	.....	9000	9.75/20D	9.75/22	Cum HB	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 5A620	5	Wis 15371W	SF	H	5.67–7.80	Tl 35100TW	W84IA	575	660	A	2I	62	8¾x3¼x¼	T
12	.... (D) D27D6T	6–7	***	150	...	.....	9500	9.75/22D	.....	Cum HB	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	Fu 5A620	5	Wis 15371W	2F	H	5.65–7.52	Tl 35100TW	W84IA	575	660	A	2I	62	8¾x3¼x¼	T
13	Fageol.....	370C 5–6	5200	202	218	30000	10900	9.75/20D	10.50/20	Wau 6-125	6–4½x5½	462	5.2	324	125–2600	7–3x13¾	Y	BL 5341	4	Own	CD	R	6.32–7.50	Tim 35000H	L41HV	484	768	G	FD	116¾	10¼x3½x¼	T
14	(D)	370DC 5–6	7250	213	229	33000	12200	9.75/20D	10.50/20	Cum HB	6–4⅞x6	672	17.	500	150–1800	7–4½x16½	Y	BL 7341	4	Own	CD	R	6.32–7.59	Tim 20450H	L41HV	538	768	G	FD	117¾	10½x3½x¼	T
15	Federal.....	50H 5–7½	3855	157	219	28000	8300	9.75/20D	10.50/20	Wau 6MZ	6–4¼x4¾	404	6.0	292	105–2400	7–2⅝x12½	Y	Cla 270V	5	Tim 76736H	2F	R	7.35–10.2	Tim 35000H	L41HV	477	768	a	FD	82	10½x3½x¼	T
16	Stewart.....	40HC ¾	545	113	121	.....	2190	6.00/16D	7.50/16	Con	4–3½x4¾	162	5.7	120	50–2800	3–2¼x4¼	N	WG	4	Spl	SF	H	5.1–4.27	Spl	L41IH	216	388	C	T	44	6x2¼x¼	T
17	.....	51A 3–4	1945	144	220	16000	6750	7.50/20D	9.00/20	Con	6–4¼x4¾	361	5.4	225	85–2800	7–2⅝x14⅜	N	Fu	5	Cla	SF	R	7.16–6.4	Cla	L41HV	408	742	E	T	64	10x2¼x¼	T
18	.....	58A 3½–4½	2540	164	224	21000	8750	7.50/20D	10.50/20	Wau	6–4¼x4¾	404	5.7	265	88–2500	7–2⅝x12½	Y	Fu	5	Cla	WF	R	7.16–6.4	Cla	B41MV	478	898	E	T	88¾	10x2¼x¼	T
19	.....	59A 3½–4½	2940	164	224	21000	7290	7.50/20D	10.50/20	Wau	6–4¼x4¾	404	5.7	265	88–2500	7–2⅝x12½	Y	Fu	5	Tim	WF	R	7.25–8.5	Cla	B41MV	550	898	E	T	88¾	10x2¼x¼	T

(*) Governor set not to exceed 45 M.P.H. Export rating 12,300 lb.

Money Savers — *Continued*

108E Keep your trucks on the road, making money, by using quick, permanent WONDER WELD to seal valve port and cylinder cracks. Turn to page 108, and check post card for details.

108F It's good economy to buy EDWARDS Quality Semi-Trailers. See page 108, and check post card for information.

108G When you insist on DUPLATE Safety Glass, you insist upon a safety glass backed by half a century of glass making. See page 108, and check post card for details.

108H You can be sure that skidding won't affect fleet schedules when your trucks are equipped with LINTERN Sanders. See page 108, and check the post card for details.

109A Peak capacities, minimum operating expense, years of endurance, rugged reliability—these you get in DAYTON Air Compressors. See page 109, and check post card for details.

109B The hose clamp with the thumb screw is shown on page 109. It's NOC-OUT, standard clamp of the industry. When writing for information don't forget to check the post card.

109C With the DETROIT Compensating Axle you get an automatic camber for semi and trailer axles—insuring longer tire life and marked fuel savings. See page 109, and check post card for details.

109D For leak-proof, blowout-proof Mufflers that are unconditionally guaranteed, specify UNIVERSAL Adjustable-Fit Mufflers. See page 109, and check post card for details.

109E Simply peel the precision laminations and you've got a smooth-as-glass surface with LAMINUM Precision Adjustment Shims. See page 109, and check post card for details.

109F The new ALCO 4-wheel Drive for Fords and Chevrolets offers novel performance features. Turn to page 109, check the post card for information.

109G When you think of governors, think of MONARCH. See page 109, and check the post card for details.

110A You'll find that one of the handiest pieces of shop equipment you can own is a DIETZ Garage Floodlite. Read about it on page 110, and check post card for details.

110B There are a lot of jobs your shop will be able to do better if there's a WILMINGTON Compressor tucked away in a corner. See page 110, and check post card for details.

110C For better engineered, better manufactured Ventilating and Heating Systems that are priced right, specify EVANS. See page 110, and check post card for details.

110D BLACKHAWK Hydraulic Jacks are fast, reliable, smooth lifters. Read, on page 110, about the 4½-ton AA8.5. Check post card for particulars.

110E With a DEARBORN Cab Over Engine you can add a cab-ful of payload to each of your Ford trucks. See page 110, and check post card for details.

110F Your batteries will give better service if you equip now with VOLT-O-MATIC Generators. See page 110, and check post card for details.

110G Truck distributors are becoming more and more interested in SUPERIOR Trailers. See page 110, and check post card for details.

111A BLACK-DIAMOND All-Rubber Seat Cushions, wearproof, economical, and, above all, comfortable, are being specified by more and more fleet operators. See page 111, and check card.

111B Choose trucks equipped with FULLER Truck Transmissions and you'll have easy shifting, quiet operation, hauling power, and dependability. See page 111, and check the post card.

111C The world's largest operators of commercial vehicles use JONES PORTABLE TACHOMETERS to check engine speeds, for tune-ups, and for seating governors. A recommendation like that means you ought to know more about them. Read the ad on page 111, then get more informtion from us via the post card.

111D Dependable WAGNER Hydraulic Brake Fluid plus the WAGNER Bleeding and Refilling Equipment described on page 111 will solve all your hydraulic brake problems. Check post card.

111E The ROBINSON Universal Coupling Holder supports the hose and seals it from dirt; the ROBINSON Autovac Coupler is open when connected, tightly closed when disconnected. See page 111, check the post card for details.

111F To know your business, you should have the Official Motor Freight Guide and the Legal Supplement of State and Federal Motor Carrier Laws. See page 111, and check post card for details.

112A The fact that SHULER Tubular Axles are made in the strongest form per pound of weight is a distinct advantage—but read about their other advantages on page 112. Check post card for details.

112B You can add 30 per cent more payload, improve weight distribution, and give your drivers better visibility and easier, safer driving by equipping your trucks with GEMMER FULL Forward Controls. See page 112, and check post card.

112C When you think of quality Trailers, think of TRAILMOBILE. See page 112, and check post card for details.

112D Loaded or empty, your trucks get the same soft ride with CLE-AIR Shock Eliminators. See page 112, and check post card for further particulars.

113A Equip with MICHIANA Duo-Flo Oil Filters for greater filtering capacity and more thorough filtering. See page 113, and check post card for particulars.

113B The TRU-STOP Emergency Brake has the positive, powerful action to stop heavy-loaded vehicles within a few feet—why not equip your trucks with it? See page 113, and check card for details.

114A There's a type of GRAMM Trailer to fit every trailer purpose. Turn to page 114, and check post card for details.

114B Are you familiar with YANKEE Lighting Equipment to meet those I. C. C. requirements? Turn to page 114, and check post card for details.

114C Solve summer heat radiator troubles now by flushing your fleet radiators with SANI-FLUSH. Read about it on page 114, and check post card for details.

114D Equip with HINDVIEW Pull-Out Mirrors and your drivers will be able to SEE CLEARLY BEHIND; you'll have fewer accidents and fewer repair bills. See page 114, and check post card.

115C You get maximum power, minimum weight, and lowest upkeep in a GAR WOOD Hoist. See page 115, and check post card for details.

116A Read, on page 116, about the increased loading space and greatly enlarged earning capacity made possible by LITTLE GIANT Frame Extensions. Check post card for details.

116B Read, on page 116, about the powerful BURCH "Hydrometer" Hoist and staunch BURCH Dump Bodies. Check post card for further details.

117A Big savings on paint jobs are made possible by STERLING Speed-Bloc Sanders. Read, on page 117, of the savings reported by other fleets, re-paint shops and forty other industries. Check card for details.

117B Read, on page 117, about the new 1937 WOHLERT Water Pump Repair Sets for Chevrolet. Check post card for free booklet, "Short Cuts in Shop Practice."

117C I. C. C., state, and local regulations are more than met with K-D Safety Lighting. See page 117, and check post card for details.

117D You'll want to know more about KINGHAM Universal Trailers after you've seen the KINGHAM on page 117. Check post card for further details.

119 The flexibility and dependability of LONG Clutches in any type of service make them the choice of the manufacturers of "Cletrac" crawler tractors. Read about it on page 119, and check post card.

120 SPICER is a dependable name that's old as the automotive industry. Read about it on page 120, and check post card for details.

Trends of Legislation

(CONTINUED FROM PAGE 92)

quirements and even Arizona has made important concessions. Oregon already has made provisions for reciprocating on registration fees, thus making a complete block of all of the states west of the Rockies where non-resident privileges are extended and reciprocal provisions are in effect.

A new Georgia statute will permit out-of-state trucks the privilege of ten trips per month for the purpose of hauling seasonable agricultural products without paying the new weight tax. Both Indiana and Maine broadened their reciprocity law. The South Carolina Highway Department is authorized to grant full reciprocity to private vehicles and occasional privileges to non-resident for-hire vehicles. The Public Service Commission of West Virginia is empowered to negotiate reciprocal agreements with other states in regard to licenses and the transportation of property.

Negotiations looking toward mutual recognition and reciprocal courtesies are under way at the present moment among the officials of Arizona, Missouri, and Oklahoma, as the result of recent legislation. The Ohio bill empowering the state reciprocity committee to deal with other states rather than adjoining states was vetoed.

Carrier Regulation

SEVERAL hundred bills providing for or affecting the regulation of motor carriers have been introduced. Most of these were in the nature of proposed amendments strengthening the regulatory powers of the states, and revisions along lines similar to the provisions of the Federal Motor Carrier Act. Nebraska, Pennsylvania and West Virginia produced new and complete motor carrier laws that pattern very closely the Federal Act.

Many of the bills introduced would bring private carriers under direct regulation, and among those enacted

are the West Virginia statute and amendatory acts of Washington and Colorado. This phase constitutes the most serious threat to commercial highway transportation today.

The program, encouraged by railroad representatives, and in some instances by common carriers and grain elevator interests, would impose business regulations on the shipper-owner, requiring him to secure permits and meet other commercial carrier requirements. Under the guise of regulating the itinerant trucker, extreme regulation of all owner-operated vehicles has been and is continuing to be advocated.

The legislature of Texas passed a bill relieving private carriers of the burdens imposed under the state Supreme Court's interpretation in the New Way Lumber Company case. This bill was vetoed by the Governor and the veto was sustained by the narrow margin of two votes in the Senate. To reaffirm and emphasize its intention, the legislature promptly adopted a noncurrent resolution reading, in part: "It was not the intention of the legislature in enacting the Motor Carrier Act of this State * * * to include the regulation of motor vehicles * * * operated in the transportation of goods, wares and merchandise owned by the owner of said vehicles; and it is further Resolved that the fact that a seller of merchandise who transports such merchandise from one place to another in the motor trucks owned by the seller, who adds to the sale price of such merchandise at point of delivery a charge to cover a part or all of the cost of transportation is not engaged in transporting for hire * * * and is not subject to the provisions of said Act nor to any rule or regulation promulgated pursuant thereto * * *." The effect of this concurrent resolution will be watched with much interest by the entire industry.

Of all the bills introduced seeking to establish maximum hours for employees, only one enactment has thus far been reported—Indiana's 14-hour law.

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(CONTINUED FROM PAGE 107)

There has been a general trend toward clarifying farm-owner exemptions in existing motor carrier laws.

House Trailers

THE country has become trailer conscious. New regulations of house trailers were adopted in South Dakota and Vermont. Increase in registration fees have been imposed in Indiana, New York, and Utah, while Oregon and Maine passed bills regulaitng trailer camps.

Operating Restrictions

DOZENS of bills providing penalties for drunken drivers, ranging from whipping to revocation of permits, have been introduced. Alabama, Indiana, Nevada, North Carolina and other states have provided or increased penalties.

Eighteen states and the Congress have considered proposals to regulate the speed of motor vehicles, mostly ranging from 40 to 50 m.p.h. Uniform traffic codes have been adopted in Arkansas, Iowa, Kansas, Minnesota and Washington, and partial codes have been adopted in other states.

Attempts to require installation of mechanical governors received scant consideration.

Size and Weight

THERE has been a definite trend toward uniformity in sizes and weights, safety glass and equipment. Enactment of the Federal Motor Carrier Act and the resulting publication of safety requirements by the Interstate Commerce Commission have undoubtedly had a wide influence in this direction. The decision of the Federal Court in the case of Barnwell vs. South Carolina Highway Department has also had a salutary influence.

Despite these encouraging signs, the fact remains that uniformity in sizes and weights is still a far distant goal vigorously guarded by well-intrenched interests whose major mission is to prevent the removal of these barriers to highway transportation.

A new Florida law increased the allowable gross weight on for-hire tractor-trailer combinations from 22,000 lb. to 34,000 lb. Idaho increased the allowable weight on all vehicles to 18,000 lb. per axle with a total maximum of 60,000 lb. The maximum gross weight has been increased in Maine to 40,000 lb. and in Kansas to 63,000 lb. for any combination. Maryland's new law would limit four-wheeled vehicles to 26,000 lb.; six-wheeled to 36,000 lb.; trailers to 22,000 lb.; and tractor-semi-trailer combinations to 40,000 lb.

Size and weight amendments so far

enacted, other than above mentioned, were passed in Indiana, Iowa, Utah and Wisconsin. The railroad-sponsored "Texas" bill, designed to limit truck pay loads to 10,000 lb. has been suggested in a number of states, and was defeated in Nevada and Nebraska. In fact, bills proposing drastic restrictions of sizes and weights have generally been defeated.

Equipment

EQUIPMENT for vehicles probably attracted more legislative attention than any other subject in the automotive-highway field. Directional signaling devices reflectors, flares, speedometers are all favored. Probably the greatest deterrent to freak legislation under this head is the set of rules adopted by the Interstate Commerce Commission, referred to above. There is a definite trend toward uniform conformity by the states and particularly by the state regulatory bodies. The industry has generally adopted safety glass and other devices that have proven merit.

Many new statutes, including the five new Uniform Traffic Codes, relate to and prescribe requirements for directional signaling devices, flares, fusees, speedometers, brakes, lights, etc.

Financial Responsibility

NEW YORK has continued its Joint Legislative Committee created to investigate and study automobile insurance and the advisability of compulsory coverage. Several states, including Illinois, had bills designed to require compulsory insurance, but so far none of them have shown any particular strength. Massachusetts, the only compulsory insurance state, has amended its law in several minor details and defeated a bill to abolish the system.

Montana adopted a uniform financial responsibility act, and amendments toward uniformity have been enacted in several other states.

If any trend is to be noted it would seem to be toward uniformity, particu-

(TURN TO NEXT PAGE, PLEASE)

(CONTINUED FROM PAGE 109)

larly in so far as it applies to commercial vehicles. The necessity of imposing financial responsibility requirements that would apply with equal force on both interstate and intrastate operations inclines the state regulatory bodies to favor requirements similar or identical to those promulgated by the Interstate Commerce Commission.

A few states have sought to protect residents from losses occasioned by foreign cars. This has generally been in the form of provisions for the service of process, although Delaware has gone to the limit of requiring the out-of-state operator to post a bond in double amount of the estimated damage before he can remove his vehicle from the place of the accident.

In General

A STUDY of the varied types of legislation, even though it be limited to only those subjects directly related to motor vehicles and highway transport, immediately suggests the difficulties of arriving at an accurate or informative summary. Even a brief discussion of hundreds of the new laws has necessarily been left out of this article.

Certain it is that no other single form of governmental functioning has received legislative attention comparable to that devoted to motorists and highways during the past six months or, for that matter, the past decade.

Beyond all doubt, the subject nearest the heart of the motorist and of the public in general is that of highway safety. That item has been left out of this discussion for two reasons: First, because it is a subject of such monumental and individual importance within itself; and Second, because there have been no marked trends nor outstanding legislation concerning it.

The 1937 legislative trends definitely indicate that the highway users must be on guard against:

1. Continued misuse of motor fuel taxes and motor vehicle imposts to other than highway purposes;
2. Increase in gasoline taxes;
3. Extension of restrictive regulations over private operations.

NEWS

(CONTINUED FROM PAGE 66)

ICC Okays Consolidated Self-Insurance

CONSOLIDATED MOTOR LINES, INC., Hartford, Conn., has posted additional securities with Interstate Commerce Commission and has been given permission to continue operating as a self-insurer. Early

Classified Advertising

Wholesale position desired as Pacific Coast Representative. Former District Management and retail experience qualify for co-operation and understanding with dealers. Former connections and references, Autocar Sales & Service Co. and Studebaker Pacific Corporation. E. P. Anderson, 404 Board of Trade Building, San Francisco.

I WANT THE TOUGHEST JOB IN FLEET OPERATION THAT IS OPEN TODAY. MY FIRST CHOICE IS AN UNORGANIZED FLEET WHICH NEEDS STANDARDIZATION AND THE ESTABLISHMENT OF ECONOMIC METHODS OF OPERATION. I HAVE A BACKGROUND OF OVER 20 YEARS' EXPERIENCE IN JUST THIS SORT OF WORK, AND GAINED MOST OF THIS EXPERIENCE ON THE WEST COAST. FOR AN INTERVIEW, ADDRESS BOX 834, OLD GREENWICH, CONN.

in April, this right had been denied Consolidated by the ICC. Consolidated has been self-insured for the past 3½ years and has reduced accidents 35 per cent. A detailed story of its insurance experience appeared in the May issue of Commercial Car Journal.

SAFETY FOUNDATION

ENCOURAGED by definite progress made during the first 16 months of the united automotive industry's effort toward the solution of the fundamental problems of highway safety, nearly a hundred top ranking executives of the car, bus, truck, tire, accessory and finance companies completed the organization of the Automotive Safety Foundation in Detroit. The Foundation is spending half a million dollars in 1937 to promote safety.

TRUCK COSTS CHARTED

AVERAGE COST of operating a 1½-ton truck for a year has been found to be 7.72 cents a mile with labor cost alone 2.94 cents a mile, according according to records on 15 trucks of different makes compiled by John L. Liles of the Illinois College of Agriculture.

Mr. Liles reported that the range of cost per mile varied from 5 to 11.9 cents, depending largely on the number of ton-miles. He found that the larger the mileage, the higher the net earnings. The trucks represented livestock haulers, but livestock made up only about 40 per cent of their hauling. Grain accounted for 14 per cent, mineral materials 29 per cent, and other commodities 17 per cent

BROCKWAY COMMITTEE

A COMMITTEE has been formed to represent the preferred stockholders of the Brockway Motor Truck Corp It consists of J. J. Livingston as chairman, Joseph G. White and Charles H. Andrews. Secretaries of the committee are Gerland I. McCarthy, 60 Broad Street, New York, and Edward J. Bullock, 308 State Tower Bldg., Syracuse, N. Y.

ASPHALT BOOK

THE NEW and enlarged "Asphalt Pocket Reference for Highway Engineers," Sixth Edition, written by Prevost Hubbard, Chemical Engineer, and Bernard E. Gray, Chief Highway Engineer, has just been issued. Asphalt Institute, 801 Second Avenue, New York, N. Y.

CONTEST

ALUMINUM INDUSTRIES, Inc., Cincinnati, announces a Permite Replacement Parts contest in which a Ford, Chevrolet or Plymouth car and 6442 other awards will be given to automotive repairmen for adding about 15 words to finish the sentence, "I use Permite Replacement Parts because . . . ." The contest is limited to repairmen.

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